STIC Search Report
EIC 2100

STIC Database Tracking Number: 185309

TO: Fred Ehichoya **Location: RND 3B31** **Art Unit : 2162** **Friday, April 14, 2006** **Case Serial Number: 10/005193**	**From: Geoffrey St. Leger** **Location: EIC 2100** **Randolph-4B31** **Phone: 23450** **geoffrey.stleger@uspto.gov**

Search Notes

Dear Examiner Ehichoya,

Attached please find the results of your search request for application 10/005193. I searched Dialog's foreign patent files and non-patent literature files; along with the Internet.

Please let me know if you have any questions.

Regards,

Geoffrey St. Leger
4B31/x23540

STIC EIC 2100 Search Request Form

185309

Today's Date:

What date would you like to use to limit the search?

Priority Date: 12/04/2001 Other:

Name FRED ETHICTHONIA

AU 2162 Examiner # 79719

Room # 3B31 Phone 2-4034

Serial # 10/005,193

Format for Search Results (Circle One):

PAPER DISK EMAIL

Where have you searched so far?

USP DWPI EPO JPO ACM IBM TDB

IEEE INSPEC SPI Other _____

Is this a "Fast & Focused" Search Request? (Circle One) YES NO

A "Fast & Focused" Search is completed in 2-3 hours (maximum). The search must be on a very specific topic and meet certain criteria. The criteria are posted in EIC2100 and on the EIC2100 NPL Web Page at http://ptoweb/patents/stic/stic-tc2100.htm.

What is the topic, novelty, motivation, utility, or other specific details defining the desired focus of this search? Please include the concepts, synonyms, keywords, acronyms, definitions, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract, background, brief summary, pertinent claims and any citations of relevant art you have found.

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receiving a target image for which a match is sought.
computing a target descriptor indicative of the target image;
mapping into the database to determine a close match of the target match descriptor among the organized match descriptors
select a candidate match descriptors from among the organized match descriptors
returning the candidate match descriptor if the candidate match descriptor is a match to the target descriptor, the match being determined by a similarity metric wherein the predetermined similarity metric defines a ratio of (i) a number of descriptors common to the target and match descriptors and (ii) a total number of descriptors unique to the target and candidate match descriptors.

STIC Searcher Geoffrey St. Leger Phone 23560

Date picked up 4/14/6 Date Completed 4/14/6

sira Search and Information Resources Administration

United States Patent [19]

Taylor et al.

[11] **Patent Number: 4,896,363**

[45] **Date of Patent: Jan. 23, 1990**

[54] **APPARATUS AND METHOD FOR MATCHING IMAGE CHARACTERISTICS SUCH AS FINGERPRINT MINUTIAE**

[75] Inventors: **Kenneth E. Taylor; Jeff B. Glickman, both of Champaign, Ill.**

[73] Assignee: **ThumbScan, Inc., Lombard, Ill.**

[21] Appl. No.: **342,666**

[22] Filed: **Apr. 24, 1989**

Related U.S. Application Data

[63] Continuation of Ser. No. 55,145, May 28, 1987, abandoned.

[51] **Int. Cl.**[4] **G06K 9/00**

[52] **U.S. Cl.** **382/5**; 382/4; 382/23

[58] **Field of Search** 382/4, 5, 23, 17, 26; 356/71

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Primary Examiner—Leo H. Boudreau

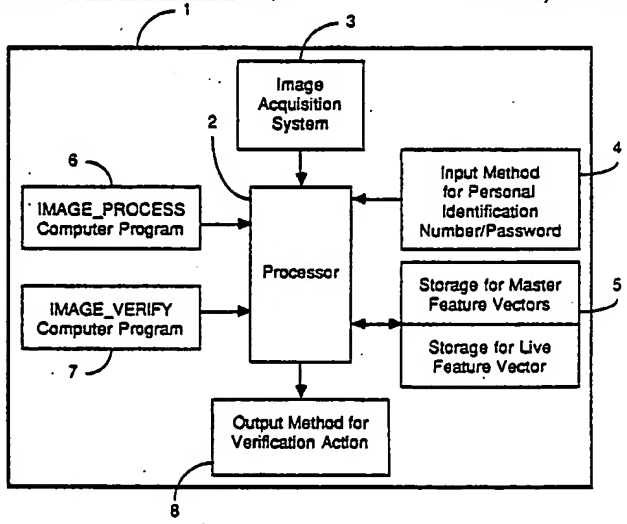
Assistant Examiner—Joseph Mancuso

Attorney, Agent, or Firm—Neuman, Williams, Anderson & Olson

[57] **ABSTRACT**

A system for matching images in which characteristic points of an image to be tested for a match, such as a fingerprint, are compared with characteristic points of a master image by attempting to match the distances between pairs of master characteristic points with distances between pairs of live characteristic points, whereby the coordinate system of the test image is not required to be aligned with the coordinate system of the master image. The matching system can be implemented in an identification mode in which the live image is attempted to be matched with each of a number of master images, or a verification mode in which the live image is attempted to be matched with a master image that is purported to be the same as the live image.

11 Claims, 15 Drawing Sheets



If the difference between the compared distance values satisfies the specified tolerance, *matchcount* is incremented by one and the next master distance value is attempted to be matched with one of the remaining live distance values. If the difference value *dspec* is greater than *spec-epsilon* for a particular live distance value, the next largest live distance value is attempted to be compared with the same master distance value. This evaluation continues until all distance values in the master distance spectrum have been attempted to be matched, or the distance values in the live distance spectrum have been exhausted, or it is not possible to match further live distance values with the remaining master distance values.

At the end of the operation of SPEC_COMPARE, the number of distance values in the master distance spectrum that have been matched to distance values in the live distance spectrum, i.e., *matchcount*, is returned to the computational loop of the ANALYZE_SPECTRUM subroutine and stored in *spectrum match* (See FIG. 8). SPEC_COMPARE will be called once by ANALYZE_SPECTRUM for each pair combination of a master distance spectrum and a live distance spectrum, for a total of *mastercount*×*livecount* times. Thus, *spectrum match* will have (*mastercount*×*livecount*) entries, where each entry contains the number of distance values that were found by SPEC_COMPARE to be matched between a unique pairing of a master distance spectrum and a live distance spectrum. *link addr*, the index to *spectrum-match*, will also have (*mastercount*×*livecount*) entries which list live distance spectrum row numbers, one through *livecount* repeated *mastercount* times. It is these arrays, *spectrum match* and *link-addr*, that are finally returned by ANALYZE_SPECTRUM to the IMAGE_VERIFY program.

The final evaluation of the data representing the correlation between distance values of the master and live distance spectra is performed in the IMAGE_MATCH subroutine, which is called once near the end of the IMAGE_VERIFY program following the execution of the ANALYZE_SPECTRUM subroutine (see FIG. 5B). IMAGE_MATCH receives the *spectrum-match* and the *link-addr* arrays and returns the Boolean variable *is-a-match* which indicates whether an overall match exists. The IMAGE_MATCH subroutine will now be described in relation to FIGS. 10A–10B.

spectrum-match, *link-addr*, *mastercount* and *livecount* are defined the same as in the ANALYZE_SPECTRUM subroutine.

spec-match-threshold is a preselected number representing the minimum proportion of distance values in a master distance spectrum that must have found matches in a live distance spectrum in order to consider the master distance spectrum as being matched to the associated live distance spectrum. This value is arbitrarily set at 67%, although a larger or smaller number may be chosen in accordance with the desired stringency of the matching system.

accept-spectrum is the minimum number of distance values in a master distance spectrum that must have found matches with distance values from a live distance spectrum for the aster distance spectrum to be deemed as matching that live distance spectrum.

minimum-match % is a preselected number representing the minimum proportion of the distance values of all master distance spectra that must be found in a matched master distance spectrum and matched with a distance value in the associated live distance spectrum in order for an overall match to be indicated by the system. This value is set at 63%, although this value also may be chosen in accordance with the desired stringency of the matching system.

sigma-matches is the running total of the number of matched distance values in the matched master distance spectra.

select is a linear array have n elements which will contain, for each live distance spectrum, the value of the greatest number of matches between the distance values in that live distance spectrum and distance values in the various master distance spectra.

total-elements is equal to the total number of possible pairings of master minutiae and live minutiae.

Turning to the portion of the IMAGE_MATCH flowchart shown in FIG. 10A, the loop at the bottom of FIG. 10A searches through *spectrum-match* to find for each live distance spectrum the master distance spectrum that matches it the best. This is done by finding the master distance spectrum with which the live distance spectrum has the most matched distance values. *link-addr* provides the index to *spectrum-match* to keep track of the live distance spectrum with which each location of *spectrum-match* is associated. When the closest matching master distance spectrum is found for a particular live distance spectrum, the number of matches between distance values of the two spectra is stored for that live distance spectrum in the *select* array. After all of the values in *spectrum-match* have been evaluated (i.e., $i \geqq$ *total-elements*), the final match evaluation is performed, as illustrated in FIG. 10B.

The loop in the programming shown in FIG. 10B checks the number of the most distance matches for each live distance spectrum, and if that number is equal to or greater than *accept-spectrum* that number of distance matches is accumulated in *sigma-matches*. After the loop evaluates all live distance spectra, *sigma-matches* will equal the number of matched distance values in the master distance spectra that are deemed to be matched with live distance spectra. *match %* is then formed as the ratio of the number in *sigma-matches* to the number in *total-elements*. In the present embodiment, if the resulting proportion exceeds 63%, i.e., *minimum-match %*, then the live fingerprint image being tested is deemed matched. This is indicated in IMAGE_MATCH by returning a "true" value to the IMAGE_VERIFY program in *is-a-match*. If *match %* does not exceed *minimum-match %*, the IMAGE_MATCH subroutine returns a "false" value to the IMAGE_VERIFY program in *is-a-match*.

Alternative standards for evaluating a match also may be utilized with the invention. For example, a final match of the live fingerprint to the master fingerprint could be defined to exist where the total number of matched master and live distance values exceeds a certain proportion of the maximum possible number, or where the proportion of matched master distance spectra exceeds a certain proportion of the total number of master distance spectra. In fact, the evaluation standard described in detail above is a hybrid of these two alternatives.

While there has been illustrated and described what is at present considered to be a preferred embodiment of the present invention, it will be understood by those skilled in the art that various changes and modifications may be made, and equivalents may be substituted for elements thereof without departing from the true scope of the invention. In addition, many modifications may

be made to adapt the teachings of the invention to a particular situation without departing from the central scope of the invention. Therefore, it is intended that this invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims.

We claim:

1. A method of matching a live image and a master image having any random or nonrandom distribution of characteristic features throughout an image, comprising the steps of:

generating a set of points representative of the characteristic features of the live image;

generating a set of points representative of the characteristic features of the master image; and

evaluating the match between the live characteristic points and the master characteristic points, said step of evaluating consisting essentially of the further steps of:

deriving the distances between a plurality of pairs of the live characteristic points;

deriving the distances between a plurality of pairs of the master characteristic points; and

comparing the live distances with the master distances to determine whether of not the live image matches the master image;

wherein the steps of deriving the distances between pairs of the live characteristic points and deriving the distances between pairs of the master characteristic points comprise for each such step the step of forming, for each point in the set of points, a spectrum of values representing the distances between the point and each other point in the set of points.

2. A method according to claim 1 further comprising the initial steps of:

providing a set of master images; and

receiving an identification of one of the set of master images for matching with the live image.

3. A method according to claim 1 wherein the step of comparing comprises comparing each of the master distance spectra to live distance spectra by determining, for each such comparison of a master distance spectrum to alive distance spectrum, the distance values in the master distance spectrum that match separate distance values in the live distance values in the live distance spectrum within a predetermined tolerance.

4. A method according to claim 3 wherein the step of comparing further comprises indicating a match between the live image and the master image if at least a predetermined proportion of master distance spectra are matched with separate live distance spectra, where a master distance spectrum is deemed to match a live distance spectrum if the proportion of the distance values in the master distance spectrum that match distance values in the live distance spectrum exceeds a predetermined value.

5. A method of identifying a person's identity consisting essentially of the steps of:

receiving an identification of selected live minutiae appearing in at least a portion of a selected fingerprint of the person, where the minutiae are identified by their spatial coordinates relative to a reference coordinate system and may be randomly or nonrandomly distributed throughout said fingerprint portion;

deriving the distances between a plurality of pairs of the live minutiae;

providing values for the distances between a plurality of pairs of selected minutiae appearing inn at least a portion of a master fingerprint wherein the minutiae may be randomly or nonrandomly distributed throughout said fingerprint portion; and

comparing the live distance with the master distances to determine whether or not the live fingerprint matches the master fingerprint;

wherein the steps of deriving the distances between pairs of live minutiae and providing the distances between pairs of master minutiae comprise for each such step the step of forming, for each minutia, a spectrum of values representing the distances between the minutia and each other minutia in its set of live or master minutiae.

6. A method according to claim 5 further comprising the steps of:

providing a collection of sets of master minutiae appearing in at least a portion of their associated master fingerprints; and

receiving an identification of one of the sets of master minutiae and deriving the distances between a plurality of pairs of minutiae in that set of master minutiae.

7. A method according to claim 5 wherein the step of comparing further comprises indicating a match for the live fingerprint if at least a predetermined proportion of master distance spectra are matched with live distance spectra, where a master distance spectrum is deemed to match a live distance spectrum if a predetermined proportion of the distance values in the master distance spectrum match distance values in the live distance spectrum within a predetermined tolerance.

8. A method according to claim 5 further comprising the step of generating an indication of a match if the live fingerprint is successfully matched with the master fingerprint, or alternatively generating an indication of the absence of a match if the live fingerprint is unsuccessfully matched with the master fingerprint.

9. An apparatus for matching a live image and a master image having any random distribution of characteristic features throughout an image, comprising:

a first means for receiving and storing a set of points representative of the characteristic features of the live image;

a second means for receiving and storing a set of points representative of the characteristic features of the master image;

computing means for receiving the live and the master characteristic points from the first and second means, deriving a distances between a plurality of pairs of the live characteristic points and deriving the distances between a plurality of pairs of the master characteristic points, wherein the computing means derives, for each characteristic point in each of the sets of live and master characteristic points, a spectrum of values representing the distances between the characteristic point and each other characteristic point in its set of characteristic points; and

means for comparing the live distances with the master distances and initiating a predetermined activity essentially only on the basis of a match between the live distances and the master distances within a predetermined tolerance.

10. An apparatus according to claim 9 wherein the first means further comprises means for sensing the live image and forming a two-tone digital representation thereof; means for storing the digital representation; and means for processing the digital representation to generate a set of points representative of characteristic features of the live image.

11. An apparatus according to claim 9, further comprising a third means associated with the first means for receiving an indication of the purported identity of the live image; and

storage means for storing a plurality of sets of points representative of characteristic features of a plurality of corresponding master images;

wherein the computing means is adapted to receive from the third means a signal identifying the purported identity of the live image and obtain from the storage means a set of points for the master image associated with the purported identity.

* * * * *

US006138113A

United States Patent [19]

Dean et al.

[11] Patent Number: 6,138,113

[45] Date of Patent: Oct. 24, 2000

[54] **METHOD FOR IDENTIFYING NEAR DUPLICATE PAGES IN A HYPERLINKED DATABASE**

[75] Inventors: **Jeffrey Dean**; **Monika R. Henzinger**, both of Menlo Park, Calif.

[73] Assignee: **AltaVista Company**, Palo Alto, Calif.

[21] Appl. No.: **09/131,469**

[22] Filed: **Aug. 10, 1998**

[51] **Int. Cl.**[7] **G06F 17/30**

[52] **U.S. Cl.** **707/2**; 707/100; 340/825.44

[58] **Field of Search** 707/1–10, 100–104, 707/200–206; 709/226; 711/163; 340/825.22, 825.44; 370/390, 400, 408

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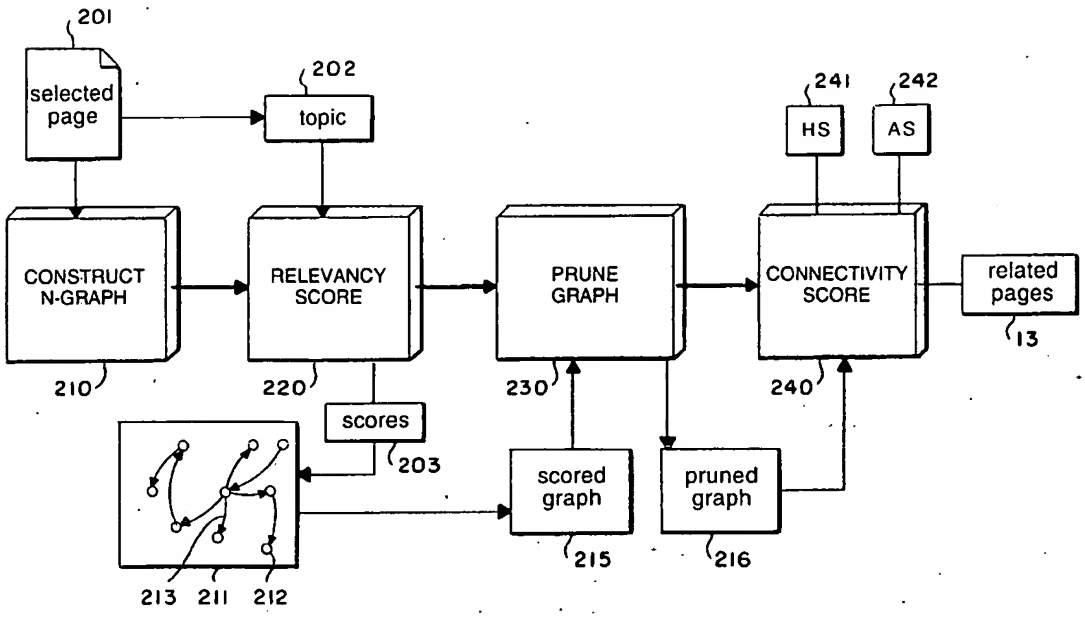
Primary Examiner—Ruay Lian Ho

Attorney, Agent, or Firm—Skjerven Morrill MacPherson LLP

[57] **ABSTRACT**

A method is described for identifying pages that are near duplicates in a linked database. In the linked database, pages can have incoming links and outgoing links. Two pages are selected, a first page and a second page. For each selected page, the number of outgoing links is determined. The two pages are marked as near duplicates based on the number of common outgoing links for the two pages.

4 Claims, 2 Drawing Sheets



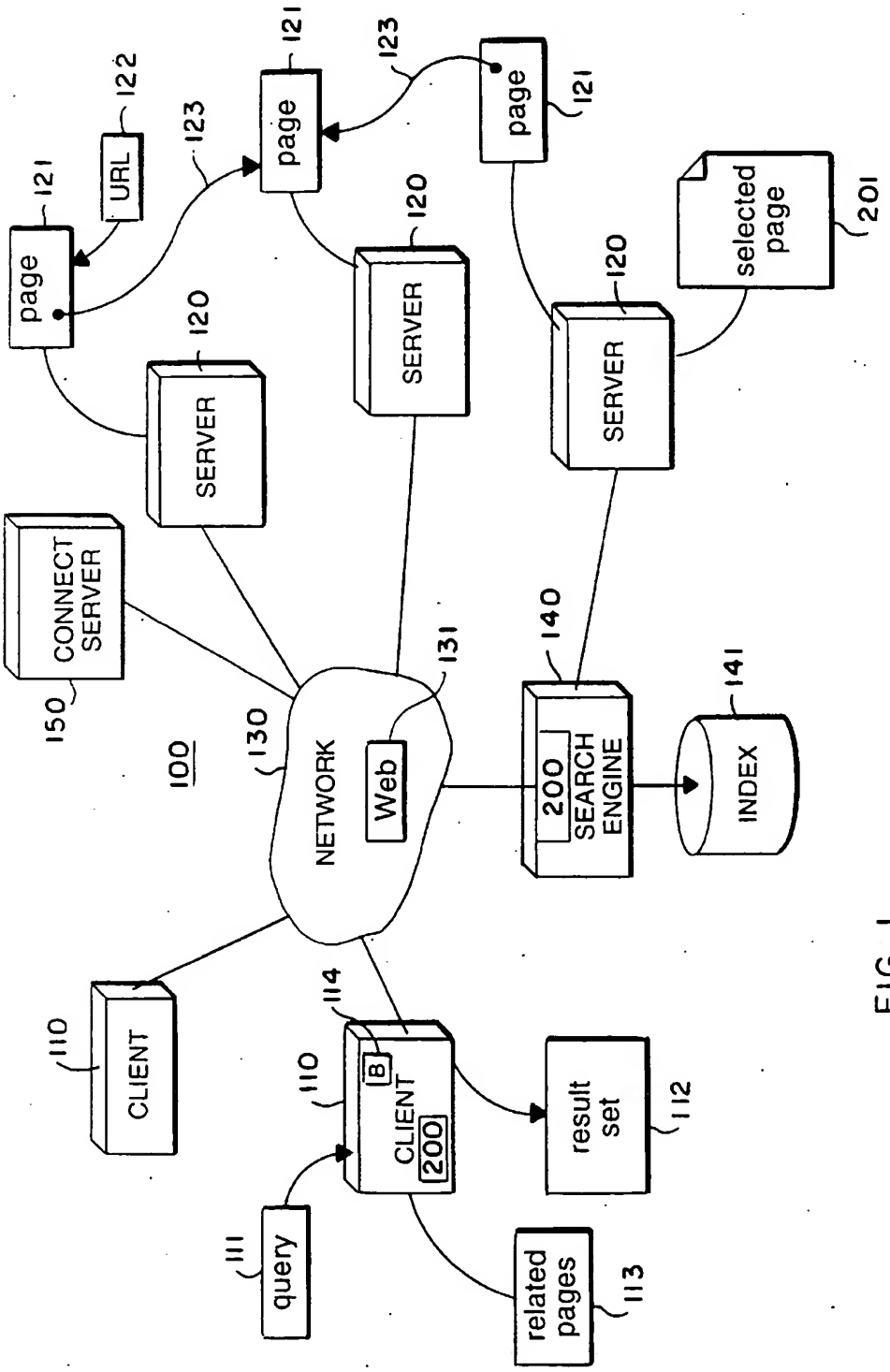

page
121
URL
122
123
page
121
123
page
121
SERVER
120
SERVER
120
SERVER
120
selected page
201
CONNECT SERVER
150
100
NETWORK
130
Web
131
200 SEARCH ENGINE
140
INDEX
141
CLIENT
110
CLIENT
110
B
200
114
result set
112
query
111
related pages
113

FIG. 1

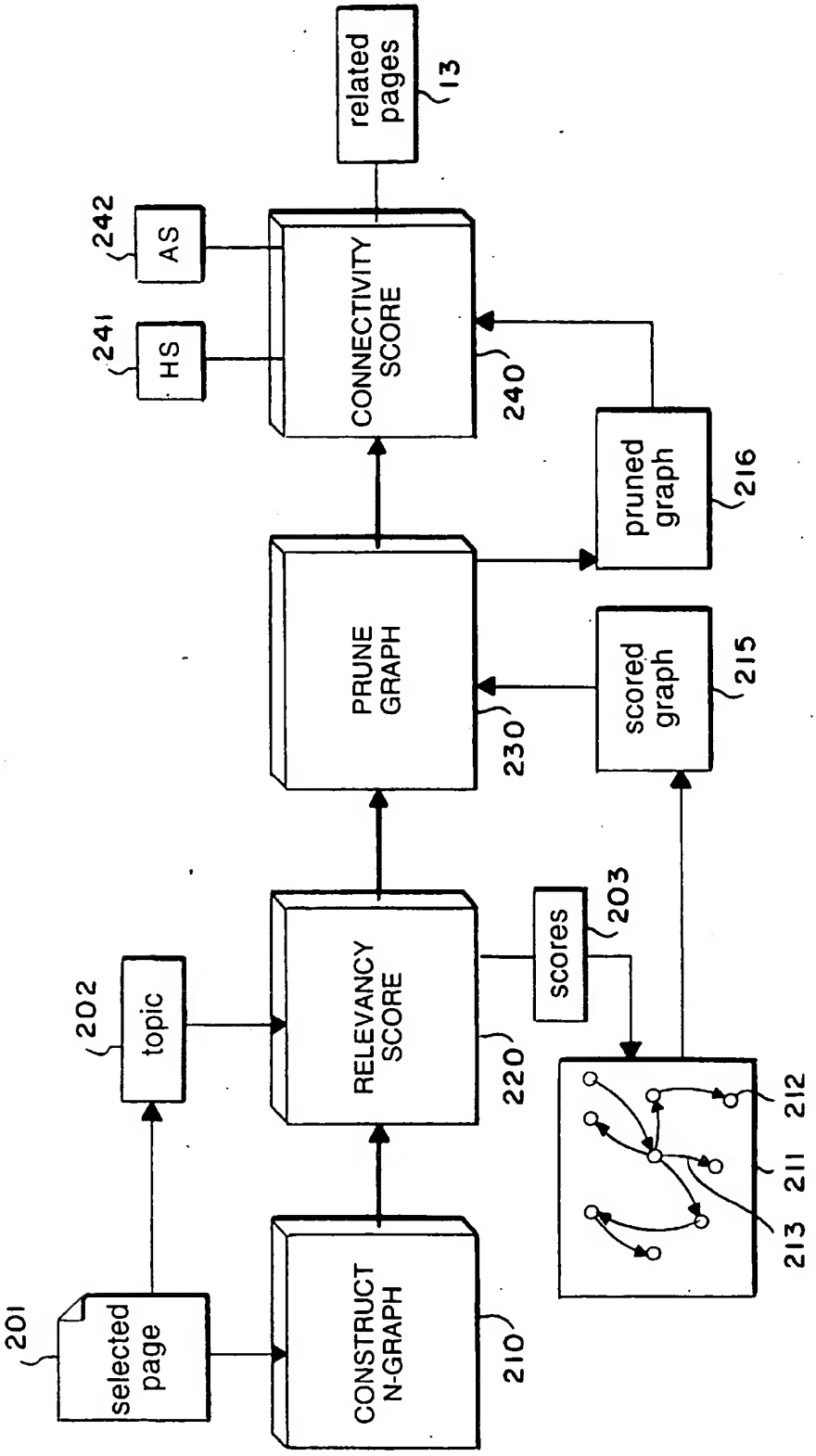

related pages
13
242
AS
241
HS
CONNECTIVITY SCORE
240
pruned graph
216
PRUNE GRAPH
230
scored graph
215
202
topic
RELEVANCY SCORE
220
scores
203
201
selected page
CONSTRUCT N-GRAPH
210
212
211
213

FIG. 2

METHOD FOR IDENTIFYING NEAR DUPLICATE PAGES IN A HYPERLINKED DATABASE

FIELD OF THE INVENTION

This invention relates generally to computerized information retrieval, and more particularly to identifying near duplicate pages in a hyperlinked database environment such as the World Wide Web.

BACKGROUND OF THE INVENTION

It has become common for users of host computers connected to the World Wide Web (the "Web") to employ Web browsers and search engines to locate Web pages having specific content of interest to users. A search engine, such as Digital Equipment Corporation's AltaVista search engine, indexes hundreds of millions of Web pages maintained by computers all over the world. The users of the hosts compose queries, and the search engine identifies pages that match the queries, e.g., pages that include key words of the queries. These pages are known as a result set.

In many cases, particularly when a query is short or not well defined, the result set can be quite large, for example, thousands of pages. The pages in the result set may or may not satisfy the user's actual information needs. Therefore, techniques have been developed to identify a smaller set of related pages.

In one prior art technique used by the Excite search engine, please see "http://www.excite.com," users first form a query that attempts to specify a topic of interest. After the result set has been returned, the user can use a "Find Similar" option to locate related pages. However, there the finding of the related pages is not fully automatic because the user first is required to form a query, before related pages can be identified. In addition, this technique only works on the Excite search engine and for the specific subset of Web pages that are indexed by the Excite search engine.

In another prior art technique, an algorithm for connectivity analysis of a neighborhood graph (n-graph) is described by Kleinberg in "Authoritative Sources in a Hyperlinked Environment," Proc. 9th ACM-SIAM Symposium on Discrete Algorithms, 1998, and also in IBM Research Report RJ 10076, May 1997, see, "http://www.cs.cornell.edu/Info/People/kleinber/auth.ps." The algorithm analyzes the link structure, or connectivity of Web pages "in the vicinity" of the result set to suggest useful pages in the context of the search that was performed.

The vicinity of a Web page is defined by the hyperlinks that connect the page to others. A Web page can point to other pages, and the page can be pointed to by other pages. Close pages are directly linked, farther pages are indirectly linked. This connectivity can be expressed as a graph where nodes represent the pages, and the directed edges represent the links. The vicinity of all the pages in the result set is called the neighborhood graph.

Specifically, the Kleinberg algorithm attempts to identify "hub" and "authority" pages in the neighborhood graph for a user query. Hubs and authorities exhibit a mutually reinforcing relationship.

In U.S. patent application Ser. No. 09/007,635 "Method for Ranking Pages Using Connectivity and Content Analysis" filed by Bharat et al. on Jan. 15, 1998, a method is described that examines both the connectivity and the content of pages to identify useful pages. However, the method is relatively slow because all pages in the neighborhood graph are fetched in order to determine their relevance to the query topic. This is necessary to reduce the effect of non-relevant pages in the subsequent connectivity analysis phase.

In U.S. patent application Ser. No. 09/058,577 "Method for Ranking Documents in a Hyperlinked Environment using Connectivity and Selective Content Analysis" filed by Bharat et al. on Apr. 9, 1998, a method is described which performs content analysis only a small subset of the pages in the neighborhood graph to determine relevance weights, and pages with low relevance weights are pruned from the graph. Then, the pruned graphed is ranked according to a connectivity analysis. This method still requires the result set of a query to form a query topic.

In any of the above cases, it would be advantageous if duplicate or near duplicate pages could quickly be identified since these pages essentially represent the same content. It would even be better, if near duplicates could be identified without having the analyze the detailed content of the pages.

SUMMARY OF THE INVENTION

Provided is a method for identifying near duplicate pages among a plurality of pages in a linked database such as the World Wide Web. A first and second page are selected for a near duplicate determination. For each page, the number of outgoing links is counted. Pages are marked as near duplicates based on the number of common outgoing links between the two pages.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of a hyperlinked environment that uses the invention;

FIG. 2 is a flow diagram of a method according to the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

System Overview

FIG. **1** shows a database environment **100** where the invention can be used. The database environment is an arrangement of client computers **110** and server computers **120** (generally "hosts") connected to each other by a network **130**, for example, the Internet. The network **130** includes an application level interface called the World Wide Web (the "Web") **131**.

The Web **131** allows the clients **110** to access documents, for example, multi-media Web pages **121** maintained by the servers **120**. Typically, this is done with a Web browser (b) **114** executing in the client **110**. The location of each page **121** is indicated by an associated Universal Resource Locator (URL) **122**. Many of the pages include "hyperlinks" **123** to other pages. The hyperlinks are also in the form of URLs.

Although the invention is described with respect to documents that are Web pages, it should be understood that our invention can also be worked with any linked data objects of a database whose content and connectivity can be characterized.

In order to help users locate Web pages of interest, a search engine **140** can maintain an index **141** of Web pages in a memory, for example, disk storage. In response to a query **111** composed by a user using the Web browser (B) **114**, the search engine **140** returns a result set **112** which satisfies the terms (key words) of the query **111**. Because the search engine **140** stores many millions of pages, the result set **112**, particularly when the query **111** is loosely specified, can include a large number of qualifying pages.

These pages may, or may not related to the user's actual information need. Therefore, the order in which the result **112** set is presented to the client **110** is indicative of the usefulness of the search engine **140**. A good ranking process will return only "useful" pages before pages that are less so.

We provide an improved ranking method **200** that can be implemented as part of a search engine **140**. Alternatively, our method **200** can be implemented by one of the clients **110** as part of the Web browser **114**. Our method uses content analysis, as well as connectivity analysis, to improve the ranking of pages in the result set **112** so that just pages related to a particular topic are identified.

Introduction

Our invention is a method that takes an initial single selected Web page **201** as input, and produces a subset of related Web pages **113** as output. Our method works by examining the "neighborhood" surrounding the initial selected page **201** in a Web neighborhood graph and examining the content of the initial selected page and other pages in the neighborhood graph.

Our method relies on the assumption that related pages will tend to be "near" the selected page in the Web neighborhood graph, or that the same keywords will appear as part of the content of related pages. The nearness of a page can be expressed as the number of links (K) that need to be traversed to reach a related page.

FIG. **2** shows the steps of a method according to our invention. As stated above, the method can be implemented as a software program in either a client or server computer. In either case, the computers **110**, **120**, and **140** include conventional components such a processor, memory, and I/O devices that can be used to implement our method.

Building the Neighborhood Graph

We start with an initial single selected page **203**, i.e., the page **201** includes a topic which is of interest to a user. The user can select the page **201** by, for example, giving the URL or "clicking" on the page. It should be noted that the initial selected page can be any type of linked data object, text, video, audio, or just binary data as stated above.

We use the initial page **201** to construct **210** a neighborhood graph (ngraph) **211** in a memory. Nodes **212** in the graph represent the initial selected page **201** as well as other closely linked pages, as described below. The edges **213** denote the hyperlinks between pages. The "size" of the graph is determined by K which can be preset or adjusted dynamically as the graph is constructed. The idea being that the graph needs to represent a meaningful number of page.

During the construction of the neighborhood graph **211**, the direction of links is considered as a way of pruning the graph. In the preferred implementation, with K=2, our method only includes nodes at distance **2** that are reachable by going one link backwards ("B"), pages reachable by going one link forwards ("F"), pages reachable by going one link backwards followed by one link forward ("BF") and those reachable by going one link forwards and one link backwards ("FB"). This eliminates nodes that are reachable only by going forward two links ("FF") or backwards two links ("BB").

To eliminate some unrelated nodes from the neighborhood graph **211**, our method relies on a list **299** of "stop" URLs, which are URLs that are so popular that they are highly referenced from many, many pages, such as popular search engines. An example is "www.altavista.digital.com." These "stop" nodes are very general purpose and so are generally not related to the specific topic of the selected page **201**, and so serve no purpose in the neighborhood graph. Our method checks each URL against the stop list **299** during the neighborhood graph construction, and eliminates the node and all incoming and outgoing edges if a URL is found on the stop list **299**.

In some cases, the neighborhood graph becomes too large. For example, highly popular pages are often pointed to by many thousands of pages and including all such pages in the neighborhood graph is impractical. Similarly, some pages contain thousands of outgoing links, which also cause the graph to become too large. Our method filters the incoming or outgoing edges by choosing only a fixed number M of them. In our preferred implementation, M is 50. In the case that the page was reached by a backwards link L, and the page has more than M outgoing links, our method chooses the M links that surround the link L on the page.

In the case of a page P that has more than M pages pointing to page P, our method will choose only M of the pages for inclusion in the neighborhood graph. Our method chooses M pages from a larger set of N pages pointing to page P by selecting the M pages with highest in-degree in the graph. The idea being that pages with high in-degree are likely to be of higher quality than those with low in-degree.

In some cases, two pages will have identical contents, or nearly identical contents. This can happen when the page was copied, for example. In such cases, we want to include only one such page in our neighborhood graph, since the presence of multiple copies of a page will tend to artificially increase the importance of any pages that they point to. We collapse duplicate pages to a single node in the neighborhood graph. There are several ways that one could identify duplicate pages.

One way would be to examine the textual content of the pages to see if they are duplicates or near-duplicates, as described by Broder et al. in "Method for clustering closely resembling data objects," file Mar. 26, 1998. Another way, that is less computationally expensive and which does not require the content of the page, is to examine the outgoing links of two pages. If there are a significant number of outgoing links and they are mostly identical, these pages are likely to be duplicates. We identify this case by choosing a threshold number of links Q. Pages P1 and P2 are considered near duplicates if both P1 and P2 have more than Q links, and a large fraction of their links are present in both P1 and P2.

Relevancy Scoring of Nodes in the Neighborhood Graph

We next score **220** the content of the pages represented by the graph **211** with respect to a topic **202**. We extract the topic **202** from the initial page **201**.

Scoring can be done using well known retrieval techniques. For example, in the Salton & Buckley model, the content of the represented pages **211** and the topic **202** can be regarded as vectors in an n-dimensional vector space, where n corresponds to the number of unique terms in the data set. A vector matching operation based on cosine of the angle between vectors is used to produces scores **203** that measure similarity. Please see, Salton et al., "Term-Weighting Approaches in Automatic Text Retrieval,", Information Processing and Management, 24(5), 513–23, 1988. A probabilistic model is described by Croft et al. in "Using Probabilistic Models of Document Retrieval without Relevance Feedback," Documentation, 35(4), 285–94, 1979. For a survey of ranking techniques in Information Retrieval see Frakes et al., "Information Retrieval: Data Structures & Algorithms," Chapter 14—'Ranking Algorithms,' Prentice-Hall, N.J., 1992.

Our topic vector can be determined as the term vector of the initial page **201**, or as a vector sum of the term vector of the initial selected page and some function of the term

vectors of all the pages presented in the neighborhood graph **211**. One such function could simply weight the term vectors of each of the pages equally, while another more complex function would give more weight to the term vectors of pages that are at a smaller distance K from the selected page **201**. Scoring **220** results in a scored graph **215**.

Pruning Nodes in the Scored Neighborhood Graph

After the graph has been scored, the scored graph **215** is "pruned" **230** to produce a pruned graph **216**. Here, pruning means removing those nodes and links from the graph that are not "similar." There are a variety of approaches which can be used as the threshold for pruning, including median score, absolute threshold, or a slope-based approach.

Connectivity Scoring the Pruned Graph

In step **240**, the pruned graph is scored again, this time based on connectivity. This scoring effectively ranks the pages, and pages above a predetermined rank can be presented to the user as the related pages **113**.

One algorithm which performs this scoring is the Kleinberg algorithm mentioned previously. This algorithm works by iteratively computing two scores for each node in the graph: a hub score (HS) **241** and an authority score **242**. The hub score **241** estimates good hub pages, for example, a page such as a directory that points to many other relevant pages. The authority score **242** estimates good authority pages, for example, a page that has relevant information.

The intuition behind Kleinberg's algorithm is that a good hub is one that points to many documents and a good authority is one that is pointed to by many documents. Transitively, an even better hub is one that points to many good authorities, and an even better authority is one that is pointed to by many good hubs.

Bharat et al. have come up with several improved algorithms that provide more accurate results than Kleinberg's algorithm, and any of these could be used as in step **240**.

Differences with the Prior Art

Our method differs from prior art in the graph building and pruning steps.

A simple prior art building method treated the n-graph as an undirected graph and used any page within a distance K to construct the graph.

Refinements to this method considered the graph as directed and allowed a certain number of backward hyperlink traversals as part of the neighborhood graph construction. Notice, this refinement required backwards connectivity information that is not directly present in the Web pages themselves.

This information can be provided by a server **150**, such as a connectivity server or a search engine database, see U.S. patent application Ser. No. 09/037,350 "Connectivity Server" filed by Broder et al. on Mar. 10, 1998. Typical values of K can be 2 or 3. Alternatively, K can be determined dynamically, depending on the size of the neighborhood graph, for example, first try to build a graph for K=2, and if this graph is not considered large enough, use a larger value for K.

There are two differences in our method. First, we start with a single Web page as input, rather than the result set produced by a search engine query. The second difference deals with how the initial neighborhood graph **211** is constructed. Kleinberg includes all pages that have a directed path of length K from or to the initial set.

In contrast, we look at the Web graph as an undirected graph and include all pages that are K undirected links away from our initial selected age. This has the benefit of including pages that can be reached by an "up-down" path traversals of the graph, such as pages that are both indexed by the same directory page, but which are not reachable from each other using just a directed path.

In the presence of useful hub pages, pages that point to many related pages, our approach will include all of the related pages referenced by the hub which might be similar to the selected page **201** in our neighborhood graph.

Pruning

Our method differs from the Kleinberg method because there no pruning of the neighborhood graph was performed. Bharat et al. improved the Kleinberg method by pruning the graph to leave a subset of pages which are fed to the ranking step to yield more accurate results.

However, because we start with a single Web page, rather than with a results from a query, we do not have an initial query against which to measure the relevance of the related pages. Instead, we use the content of the initial page, and optionally the content of other pages in the neighborhood graph to arrive at a topic vector.

Advantages and Applications

Our invention enables automatic identification of Web pages related to a single Web page. Thus, if a user locates just one page including an interesting topic, then other pages related to the topic are easily located. According to the invention, the relationship is established through the use of connectivity and content analysis of the page and nearby pages in the Web neighborhood.

By omitting the content analysis steps of our method, the method is able to identify related URLs for the selected page **201** solely through connectivity information. Since this information can be quickly provided by means of a connectivity server **150**, the set of related pages can be identified without fetching any pages or examining the contents of any pages.

One application of this invention allows a Web browsers in a client computer to provide a "Related Pages" option, whereby users can quickly be taken to any of the related pages. Another application is in a server computer that implements a Web search engine. There, a similar option allows a user to list just related pages, instead of the entire result set of a search.

We claim:

1. A method for identifying pages that are near duplicates in a linked database, the pages in the database having incoming links and outgoing links, comprising the steps of:

selecting a first page and a second page;

determining the outgoing links for the first page and the second page;

determining the number of outgoing links that are common for the first page and the second page;

marking the first page and the second page as near duplicate pages based on the number of common outgoing links.

2. The method of claim **1** wherein the number of common outgoing links is the intersection of the outgoing links of the first and second pages.

3. The method of claim **1** wherein the first and second pages are near duplicate pages when the ratio of the number of common outgoing links divided by the union of the outgoing links of the first and second pages is larger than a predetermined threshold.

4. The method of claim **1** wherein the first and second pages are near duplicate pages when the ratio of the number of common outgoing links divided by the total number of outgoing links is larger than a predetermined threshold.

* * * * *

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File 347:JAPIO Dec 1976-2005/Dec(Updated 060404)
         (c) 2006 JPO & JAPIO
File 350:Derwent WPIX 1963-2006/UD,UM &UP=200624
         (c) 2006  Thomson Derwent

Set     Items   Description
S1      92043   (TARGET OR REFERENCE OR SAMPLE OR EXAMPLE OR CONTROL OR SU-
             BJECT)(2W)(IMAGE? ? OR PHOTO? ? OR PHOTOGRAPH? ? OR PICTURE? ?
              OR DRAWING? ? OR GRAPHIC? ? OR OBJECT? ?)
S2       6751   S1(10N)(MATCH??? OR SIMILAR? OR DISTANCE OR EQUIVALEN??? OR
              ANALOG??? OR CORRESPOND??? OR CORRELAT??? OR EQUATE OR EQUAT-
             E? ? OR EQUATING)
S3       3238   S1(10N)COMPAR????
S4     122453   (DESCRIPTOR? ? OR ATTRIBUTE? ? OR ASPECT? ? OR TRAIT? ? OR
             CHARACTERISTIC? ? OR PROPERTY OR PROPERTIES OR PARAMETER? ? OR
              FEATURE? ? OR VECTOR? ?)(7N)(IMAGE? ? OR PHOTO? ? OR PHOTOGR-
             APH? ? OR PICTURE? ? OR DRAWING? ? OR GRAPHIC? ? OR OBJECT? ?)
S5     252174   (SIZE OR COLOR? ? OR COLOUR? ? OR LENGTH OR CONTRAST? ? OR
             VECTOR? ?)(7N)(IMAGE? ? OR PHOTO? ? OR PHOTOGRAPH? ? OR PICTU-
             RE? ? OR DRAWING? ? OR GRAPHIC? ? OR OBJECT? ?)
S6      21314   (NUMBER OR AMOUNT OR VOLUME OR QUANTITY)(5W)(DESCRIPTOR? ?
             OR ATTRIBUTE? ? OR ASPECT? ? OR TRAIT? ? OR CHARACTERISTIC? ?
             OR PROPERTY OR PROPERTIES OR PARAMETER? ? OR FEATURE? ? OR VE-
             CTOR? ?)
S7         70   S2:S3 AND S4:S5 AND S6
S8          3   S7 AND AC=US/PR AND AY=(1963:2001)/PR
S9         11   S7 AND AC=US AND AY=1963:2001
S10        11   S7 AND AC=US AND AY=(1963:2001)/PR
S11        54   S7 AND PY=1963:2001
S12        55   S8:S11
S13        55   IDPAT (sorted in duplicate/non-duplicate order)
S14     59101   (RATIO? ? OR PERCENTAG?? OR PROPORTION??)(10N)(DESCRIPTOR?
             ? OR ATTRIBUTE? ? OR ASPECT? ? OR TRAIT? ? OR CHARACTERISTIC?
             ? OR PROPERTY OR PROPERTIES OR PARAMETER? ? OR FEATURE? ? OR -
             VECTOR? ?)
S15        23   S2:S3 AND S4:S5 AND S14
S16        18   S15 NOT S7
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13/5/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013800160 **Image available**
WPI Acc No: 2001-284372/ **200130**
XRPX Acc No: N01-202803
Waterborne target identification device compares target amount **of** characteristics **and target candidates** amount **of** characteristics **and outputs identification result**
Patent Assignee: MITSUBISHI ELECTRIC CORP (MITQ)
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2000275338	A	20001006	JP 9982269	A	19990325	200130	B
JP 3510140	B2	20040322	JP 9982269	A	19990325	200421	

Priority Applications (No Type Date): JP 9982269 A 19990325
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2000275338	A		12	G01S-013/90	
JP 3510140	B2		12	G01S-013/89	Previous Publ. patent JP 2000275338

Abstract (Basic): JP 2000275338 A
NOVELTY - Amount calculation unit (8) calculates target direction and target **amount** of **characteristics** based on produced target **image** . Amount calculation unit (10) calculates target candidates **amount** of **characteristics** . Amount comparator (11) compares the calculated results and outputs an identification result.
DETAILED DESCRIPTION - Target image production unit (7) processes the image to radar image based on **distance** resolution, to produce **target image** . **Reference image** production unit (9) produces reference image from preset target candidate 3D data based on projection angle of signal and distance resolution of radar receiving unit (1). An INDEPENDENT CLAIM is also included for target identification procedure.
USE - Waterborne target identification device for identifying velocity, position, flight path, etc.
ADVANTAGE - Evaluates fixed quantity target and identification processing time of target is carried out in short time.
DESCRIPTION OF DRAWING(S) - The figure (containing non-English text) shows the block diagram of waterborne target identification device.
Radar receiving unit (1)
Image production units (7,9)
Amount calculation units (8,10)
Comparator (11)
pp; 12 DwgNo 1/20
Title Terms: TARGET; IDENTIFY; DEVICE; COMPARE; TARGET; AMOUNT; CHARACTERISTIC; TARGET; CANDIDATE; AMOUNT; CHARACTERISTIC; OUTPUT; IDENTIFY; RESULT
Derwent Class: T01; W06
International Patent Class (Main): G01S-013/89; G01S-013/90
International Patent Class (Additional): G01S-007/40; G06T-007/00
File Segment: EPI

13/5/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX

012135900 **Image available**
WPI Acc No: 1998-552812/ **199847**
XRPX Acc No: N98-431568
Object detection method used in photography - involves comparing

colour characteristics **of strange** image **with that of objective** reference image **for detecting existence of search object in strange image**

Patent Assignee: NIPPON TELEGRAPH & TELEPHONE CORP (NITE)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 10247246	A	19980914	JP 9767238	A	19970305	199847	B

Priority Applications (No Type Date): JP 9767238 A 19970305
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 10247246	A		8	G06T-007/00	

Abstract (Basic): JP 10247246 A

The method involves producing an objective reference image in a learning unit (10). The **amount** of **colour characteristics** of the reference **image** is calculated in a calculation unit (40). The **amount** of colour **characteristics** for each partial area of a strange **image** is also calculated in the calculation unit.

A detector unit (20) compares the **colour characteristics** of the strange **image** with that of the reference image for detecting the existence of search object in the strange image along with its position. The detected result in output to an output unit. The calculation unit uses a histogram obtained from the ratio of a pixel to its colour value for calculating the colour characteristics.

ADVANTAGE - Is utilised under different illumination environments.

Dwg.1/5

Title Terms: OBJECT; DETECT; METHOD; PHOTOGRAPH; COMPARE; COLOUR; CHARACTERISTIC; IMAGE; OBJECTIVE; REFERENCE; IMAGE; DETECT; EXIST; SEARCH ; OBJECT; IMAGE
Derwent Class: T01
International Patent Class (Main): G06T-007/00
International Patent Class (Additional): G06T-001/00
File Segment: EPI

13/5/13 (Item 13 from file: 350)

DIALOG(R)File 350:Derwent WPIX

013038390 **Image available**
WPI Acc No: 2000-210243/ **200019**
XRPX Acc No: N00-157040

Target object distance **data measurement unit for image processor, searches correspondence relationship of specific image pixel with standard image pixel, based on which** distance **data of** target object **is calculated**

Patent Assignee: VICTOR CO OF JAPAN (VICO)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 11337312	A	19991210	JP 98145827	A	19980527	200019	B

Priority Applications (No Type Date): JP 98145827 A 19980527
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 11337312	A		6	G01B-011/00	

Abstract (Basic): JP 11337312 A

NOVELTY - A discrimination unit (8) distinguishes whether the correspondence relationship between attention pixel of a standard image and corresponding pixel of another image is correct. A compensation unit (9) adjusts the parallax data which is required by congruent point search unit (6), when discrimination result is incorrect. DETAILED

DESCRIPTION - Amount extraction units (5L,5R) extract the **amount** of **characteristics** in **images** obtained from input units (4L,4R), one of which is a standard image. A pixel of specific image corresponding to attention pixel of standard image. A pixel of specific image corresponding to attention pixel of standard image, is searched by congruent point search unit (6) . A calculation unit (7) calculates the **distance** data of **target object** based on parallax data between both pixels.

USE - For **target object distance** data measurement in image processor.

ADVANTAGE - Improves accuracy of congruent point search, hence obtains accurate distance data. DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of component of principal part of **target object distance** data measurement unit. (4L,4R) Image input units; (5L,5R) Amount extraction units; (6) Congruent point search unit; (7) Calculation unit; (8) Discrimination unit; (9) Compensation unit.

Dwg.1/6

Title Terms: TARGET; OBJECT; DISTANCE; DATA; MEASURE; UNIT; IMAGE; PROCESSOR; SEARCH; CORRESPOND; RELATED; SPECIFIC; IMAGE; PIXEL; STANDARD; IMAGE; PIXEL; BASED; DISTANCE; DATA; TARGET; OBJECT; CALCULATE
Derwent Class: S02; T01
International Patent Class (Main): G01B-011/00
International Patent Class (Additional): G01C-003/06; G06T-007/00
File Segment: EPI

13/5/14 (Item 14 from file: 350)
DIALOG(R)File 350:Derwent WPIX

012979766 **Image available**
WPI Acc No: 2000-151619/ **200014**
XRPX Acc No: N00-112605

Similar object search procedure in electronic museum, electronic catalog, etc

Patent Assignee: NIPPON TELEGRAPH & TELEPHONE CORP (NITE)
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 2000010989	A	20000114	JP 98173249	A	19980619	200014	B
JP 3505393	B2	20040308	JP 98173249	A	19980619	200418	

Priority Applications (No Type Date): JP 98173249 A 19980619
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2000010989	A		9	G06F-017/30	
JP 3505393	B2		9	G06F-017/30	Previous Publ. patent JP 2000010989

Abstract (Basic): JP 2000010989 A

NOVELTY - A search unit (15) uses index to search object opposing reference object, based on number determined by weighting coefficient difference between **amount** variety of **characteristics** . From vicinity **objects** , candidate **objects** are collected. **Similarity** is judged, based on **distance** between **reference object** and weighting coefficient of candidate. The candidate objects are set in order.

DETAILED DESCRIPTION - A storage unit (10) stores the **amount** variety of the **characteristics** of **object** as a point of multidimensional **vector** space. An index storing unit (12) stores index for data search. A reference object input unit (131) is used to input the reference object. In the designation unit (133), the user designates the number of similar objects. Weight designation unit (132) finds weight between the **amount** variety of the **characteristic** of **objects** . The amount calculation unit (11) **compares amount** of the **characteristics** of the **reference object** , based on the **distance** between the **reference object** and **similar object** , stored as a

multidimensional **vector** space in storage unit. INDEPENDENT CLAIMS are also included for the following:
(a) similar object search apparatus;
(b) similar object search program stored in recording medium.
USE - In electron museum, electron catalog to search object **similar** to **reference objects** such as image, audio, music, text etc.
ADVANTAGE - As the amount calculation unit calculates **amount** variety of **characteristics** of **object** based on the **distance** between **reference object** and **similar** object, labor for **distance** calculation is saved. Searches **similar** object with arbitrary weight with reduced time.
DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of the similar object search apparatus.
Storage unit (10)
Amount calculation unit (11)
Index storing unit (12)
Vicinity object search unit (15)
Reference object input unit (121)
Weight designation unit (132)
Number designation unit (133)
pp; 9 DwgNo 1/3
Title Terms: SIMILAR; OBJECT; SEARCH; PROCEDURE; ELECTRONIC; MUSEUM; ELECTRONIC; CATALOGUE
Derwent Class: T01
International Patent Class (Main): G06F-017/30
International Patent Class (Additional): G06T-007/00
File Segment: EPI

13/5/16 (Item 16 from file: 350)
DIALOG(R)File 350:Derwent WPIX

012413604 **Image available**
WPI Acc No: 1999-219712/ **199919**
XRPX Acc No: N99-162550
Image search system for searching e.g. face image read from photograph when inserting face image to e.g. document - has characteristic **amount search unit which searches** image **for search, based on** characteristic **amount of** image **for search**
Patent Assignee: OMRON KK (OMRO)
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 11053386	A	19990226	JP 97211631	A	19970806	199919	B

Priority Applications (No Type Date): JP 97211631 A 19970806
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 11053386	A		10	G06F-017/30	

Abstract (Basic): JP 11053386 A
NOVELTY - A characteristic **amount** memory stores the amount of **characteristics** of the **image** of the **target objects** of 1similar shape. A **characteristic** amount search unit searches the **image** for search, based on the **characteristic** amount of the **image** for search. DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:an image search method; and an image search program recording medium.
USE - For searching e.g. face image read from photograph when inserting face image to e.g. document. For e.g. portrait production apparatus.
ADVANTAGE - Similarity of images can be judged objectively and quantitatively on the basis of the **amount** of **characteristics** e.g.

size and angle of the **image** of the **target object** . Improves hitting ratio in searching known image, standard image or **similar** image. DESCRIPTION OF DRAWING(S) - The figure shows the block diagram of a portrait production apparatus.
Dwg.2/10
Title Terms: IMAGE; SEARCH; SYSTEM; SEARCH; FACE; IMAGE; READ; PHOTOGRAPH; INSERT; FACE; IMAGE; DOCUMENT; CHARACTERISTIC; AMOUNT; SEARCH; UNIT; SEARCH; IMAGE; SEARCH; BASED; CHARACTERISTIC; AMOUNT; IMAGE; SEARCH
Derwent Class: T01
International Patent Class (Main): G06F-017/30
International Patent Class (Additional): G06T-007/00
File Segment: EPI

13/5/31 (Item 31 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009298518 **Image available**
WPI Acc No: 1992-425927/ **199252**
XRPX Acc No: N92-324979
Image recognition method - characterising and comparing images on basis of internal structure, independent of image size **and** image **orientation**
Patent Assignee: TECHNIBUILD INC (TECH-N)
Inventor: PAWLICKI J A; WALCH M A
Number of Countries: 011 Number of Patents: 007
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 519737	A2	19921223	EP 92305646	A	19920619	199252	B
AU 9218372	A	19921224	AU 9218372	A	19920618	199309	
CA 2071599	A	19921220	CA 2071599	A	19920618	199316	
US 5267332	A	19931130	US 91717430	A	19910619	199349	
			US 9349658	A	19930420		
AU 648001	B	19940331	AU 9218372	A	19920618	199418	
TW 235351	A	19941201	TW 92104737	A	19920805	199507	
EP 519737	A3	19940119	EP 92305646	A	19920619	199517	

Priority Applications (No Type Date): US 91717430 A 19910619; US 9349658 A 19930420
Cited Patents: No-SR.Pub; 2.Jnl.Ref; JP 56031183; JP 61195478; US 3268864
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 519737	A2	E	69	G06K-009/68	
Designated States (Regional): CH DE FR GB IT LI					
US 5267332	A		62	G06K-009/44	Cont of application US 91717430
AU 648001	B			G06K-009/46	Previous Publ. patent AU 9218372
AU 9218372	A			G06K-009/46	
CA 2071599	A			G06K-009/68	
TW 235351	A			G06F-015/02	
EP 519737	A3			G06K-009/68	

Abstract (Basic): EP 519737 A
The method involves creating an image of the character and reducing the image of the character to a skeleton image. The skeleton image of the character is represented on the basis of internal structure corresponding to a number of nodes, and connections between the number of nodes. The representation of the skeleton image of the character is stored as the representation of the internal structure of the character.
The internal structure is represented as a linked list with each of the number of nodes corresponding to an entry in the list, and each of the connections between them to a painter to another entry in the list.
USE/ADVANTAGE - For recognition of handwritten characters. Highly

efficient.
Dwg.24/40
Title Terms: IMAGE; RECOGNISE; METHOD; CHARACTERISTIC; COMPARE; IMAGE; BASIS; INTERNAL; STRUCTURE; INDEPENDENT; IMAGE; SIZE; IMAGE; ORIENT
Derwent Class: T04
International Patent Class (Main): G06F-015/02; G06K-009/44; G06K-009/46; G06K-009/68
International Patent Class (Additional): G06F-015/70; G06F-015/72; G06K-009/80
File Segment: EPI

13/5/39 (Item 39 from file: 347)
DIALOG(R)File 347:JAPIO

06169010 **Image available**
METHOD FOR NORMALIZING IMAGE, IMAGE SIMILARITY DISCRIMINATING DEVICE AND RECORD MEDIUM

PUB. NO.: 11-110557 [JP 11110557 A]
PUBLISHED: April 23, 1999 (**19990423**)
INVENTOR(s): NAKAJIMA MASAOMI
NONAKA SHUNICHIRO
NAKAMURA TAICHI
APPLICANT(s): NTT DATA CORP
APPL. NO.: 09-270083 [JP 97270083]
FILED: October 02, 1997 (19971002)
INTL CLASS: G06T-007/00; H04N-001/387; H04N-001/40

ABSTRACT

PROBLEM TO BE SOLVED: To provide an image similarity discriminating device for specifying a common area between an original author image and a **subject image** which supposedly approximates the original author image.

SOLUTION: This image **similarity** discriminating device 1 is constituted by providing a data input part 11, a statistical amount calculating part 12, a normalization processing part 13, a deviation value processing part 14, a common area discriminating part 15 and a result output part 16. After the original author image and the subject image are normalized by statistical **amount** of each **image characteristic** at the normalization processing part 13, the area with a large difference **amount** in **characteristics** between both **images** is specified, and the specified area is removed at the deviation value processing part 14. Then a distance value between both the images is calculated by calculating the statistical amount and performing normalization processing again. The number of common areas is discriminated by comparing the distance value and a threshold value by the common area discriminating part 15. When many common areas exist, information regarding the subject images is outputted to the result output part 16 and then visualized.

13/5/40 (Item 40 from file: 347)
DIALOG(R)File 347:JAPIO

06097813 **Image available**
METHOD AND DEVICE FOR RETRIEVING IMAGE AND RETRIEVAL SERVICE UTILIZING IT

PUB. NO.: 11-039332 [JP 11039332 A]
PUBLISHED: February 12, 1999 (**19990212**)
INVENTOR(s): MUSHA YOSHINORI

HIROIKE ATSUSHI
MORI YASUHIDE
APPLICANT(s): HITACHI LTD
APPL. NO.: 09-196154 [JP 97196154]
FILED: July 22, 1997 (19970722)
INTL CLASS: G06F-017/30; G06T-001/00; G06T-007/00

ABSTRACT

PROBLEM TO BE SOLVED: To efficiently retrieve a desired image from an **image** database by calculating integrated **similarity** from a **characteristic** amount that is extracted from a **reference** **image** and each **characteristic** amount that is preliminarily assigned to a retrieved image.
SOLUTION: A person who retrieves designates a specific area of a reference image through a GUI of an input operation **image** display 209, also designates its **characteristic** amount 201 and inputs its weight 204, etc. Integrated similarity 203' is generated by matching the amount 201 of an **image** to an **image** **characteristic** amount of an **image** database 205, acquiring similarity 203 in each **characteristic** **amount** and weighting a **characteristic** amount in each reference **image** . After that, a sort step 208 performs rearrangement in order of large integrated similarity, its retrieval result data name is sent to the display 209 and an image layout is generated. The data names is sent as a read request 212 for a retrieval result image to an image database 205, and image data 210 is sent to the display 209.

13/5/42 (Item 42 from file: 347)
DIALOG(R)File 347:JAPIO

05957665 **Image available**
METHOD FOR RETRIEVING SIMILAR OBJECT AND DEVICE THEREFOR

PUB. NO.: 10-240765 [JP 10240765 A]
PUBLISHED: September 11, 1998 (**19980911**)
INVENTOR(s): YAMAMURO MASASHI
NAKAGAWA JUNICHI
TANIGUCHI NOBURO
CATHERINE CURTIS
APPLICANT(s): NIPPON TELEGR & TELEPH CORP <NTT> [000422] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 09-047579 [JP 9747579]
FILED: March 03, 1997 (19970303)
INTL CLASS: [6] G06F-017/30
JAPIO CLASS: 45.4 (INFORMATION PROCESSING -- Computer Applications)

ABSTRACT

PROBLEM TO BE SOLVED: To save a labor for operating distance calculation for all objects, and to retrieve a similar object by arbitrary weight.

SOLUTION: Coordinator part 16 designates characteristic amounts VRi of the (i)th kind of a reference object and a number f(K) for designating the **number** of neighborhood **objects** for each **characteristic** amount kind (i), and requests neighborhood **object** retrieval to a neighborhood object retrieving part 15. The neighborhood object retrieving part 15 searches the f(K) pieces of neighborhood objects with a short spatial **distance** between points corresponding to the **reference** **objects** in the multi-dimensional **vector** space for each characteristic amount kind (i) by using an index, and returns them to the coordinator part 16. The coordinator part 16 prepares a candidate object group by gathering the neighborhood **objects** returned for all the **characteristic** amount kinds. Next, when a **distance**

(dki) between points VRi and Obki corresponding to the **reference objects** for each **characteristic** amount kind is not searched for a candidate object Obk, the insufficient amounts are calculated.

13/5/46 (Item 46 from file: 347)
DIALOG(R)File 347:JAPIO

05293967 **Image available**
DEVICE AND METHOD FOR RETRIEVING SIMILAR PICTURE

PUB. NO.: 08-249467 [JP 8249467 A]
PUBLISHED: September 27, 1996 (**19960927**)
INVENTOR(s): NAKAJIMA YASUYUKI
HORI HIRONAGA
KANO TAMOTSU
APPLICANT(s): KOKUSAI DENSHIN DENWA CO LTD <KDD> [000121] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 07-077098 [JP 9577098]
FILED: March 09, 1995 (19950309)
INTL CLASS: [6] G06T-007/00; G11B-027/02; H04N-005/76
JAPIO CLASS: 45.9 (INFORMATION PROCESSING -- Other); 42.5 (ELECTRONICS -- Equipment)

ABSTRACT

PURPOSE: To retrieve **similar picture** independently of the **characteristic** of a sampled reference **picture** and to improve the retrieval accuracy by updating the **reference picture** every time when the **similar** picture is detected in retrieving the similar picture.

CONSTITUTION: A reference picture setting part 1 sets a reference picture R0 from the picture inputted by a picture input part 0. A part 2 setting and updating the feature **amount** sets the **feature** amount Temp (Rj) of the reference **picture** . On the other hand, a part 4 selecting the picture to be retrieved selects the picture to be retrieved Si (i=1...n) from the inputted **picture** . A part 5 setting the **feature amount** sets the **feature amount** Temp (Si). The two **feature** amounts Temp (Rj) and the Temp (Si) are inputted to a similarity arithmetic part 6 and the degree of similarity is measured. The degree of similarity is estimated by a part 7 judging the similarity. When the degree of similarity is high, the retrieval picture is judged to belong to the same cluster with the reference picture, then the processing of a cluster **picture** recording part 8 is performed. The feature amount Temp (Rj) of the **reference picture** is updated every time when the **similar** picture is detected.

13/5/48 (Item 48 from file: 347)
DIALOG(R)File 347:JAPIO

04868131 **Image available**
METHOD AND DEVICE FOR PICTURE RETRIEVAL

PUB. NO.: 07-160731 [JP 7160731 A]
PUBLISHED: June 23, 1995 (**19950623**)
INVENTOR(s): SHIMURA NORIO
SAKAUCHI YUICHI
APPLICANT(s): CANON INC [000100] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 05-309135 [JP 93309135]
FILED: December 09, 1993 (19931209)
INTL CLASS: [6] G06F-017/30; G06T-001/00
JAPIO CLASS: 45.4 (INFORMATION PROCESSING -- Computer Applications); 45.9 (INFORMATION PROCESSING -- Other)

ABSTRACT

PURPOSE: To provide the method and the device which are capable of high-precision picture retrieval matched to user's intention.

CONSTITUTION: Appendant information related to a picture to be retrieved is inputted from a retrieval appendant information input part 43 and is compared with appendant information in the appendant information storage part of a data base to select a **matched** candidate of picture data. Plural **example pictures** are inputted from an example **picture** input part 41, and plural **feature quantity** data are extracted by a **feature** quantity calculating part 2. Distances between these feature **quantity** data and the **feature** quantity of the selected **picture** stored in a **feature** quantity storage part 33 are calculated. These distances are sorted in the descending order by a candidate order determining part, and corresponding picture data is displayed on a display part 7.

13/5/50 (Item 50 from file: 347)

04392134 **Image available**

PATTERN RECOGNIZING DEVICE

PUB. NO.: 06-036034 [JP 6036034 A]
PUBLISHED: February 10, 1994 (**19940210**)
INVENTOR(s): FURUYUI YOSHIHIRO
TAMAGAWA MITSUAKI
APPLICANT(s): MITSUBISHI HEAVY IND LTD [000620] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 04-187756 [JP 92187756]
FILED: July 15, 1992 (19920715)
INTL CLASS: [5] G06F-015/70; G06F-015/66
JAPIO CLASS: 45.4 (INFORMATION PROCESSING -- Computer Applications)
JOURNAL: Section: P, Section No. 1739, Vol. 18, No. 261, Pg. 115, May 18, 1994 (19940518)

ABSTRACT

PURPOSE: To enable the high-speed processing of image pattern recognition by shortening the time required for recognition algorithm development and further reducing redundant data in data used for discrimination.

CONSTITUTION: When a sufficient number of sample images for the discrimination are supplied by discrimination classes, a ternary converting device 1a converts each pixel brightness value into a ternary value and a Hadamard's transforming device 2a performs Hadamard's transformation to generate feature **quantity vectors** . A templet generating device 3 generates a templet from the feature **quantity vectors** and stores it in a memory 4. Once an image to be discriminated is supplied, a ternary converting device 1b converts each pixel brightness value into a ternary value **similarly** to the **sample image** and a Hadamard's transforming device 2b performs Hadamard's transformation. A matching extent calculating device 5 calculates the extent of matching of the **feature quantity vectors** of the **image** to be discriminated with the templet to decides a class.

13/5/52 (Item 52 from file: 347)

04298472 **Image available**

PATTERN MATCHING METHOD FOR IMAGE

PUB. NO.: 05-290172 [JP 5290172 A]

PUBLISHED: November 05, 1993 (**19931105**)
INVENTOR(s): NOMURA YOSHIHIKO
MURAKAMI TOMOHIRO
APPLICANT(s): SUN TEC KK [488076] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 04-118084 [JP 92118084]
FILED: April 10, 1992 (19920410)
INTL CLASS: [5] G06F-015/70; G06K-009/00
JAPIO CLASS: 45.4 (INFORMATION PROCESSING -- Computer Applications); 45.3 (INFORMATION PROCESSING -- Input Output Units)
JOURNAL: Section: P, Section No. 1692, Vol. 18, No. 89, Pg. 14, February 14, 1994 (19940214)

ABSTRACT

PURPOSE: To eliminate the need to extract a feature **quantity** and to estimate conversion **parameters** in a short time by converting a reference image by density gradation conversion and geometric conversion and then estimating an image so that the **reference image matching** with an input image.

CONSTITUTION: The **image** conversion is represented with an unknown pattern **vectors** (x) consisting of conversion parameters x(sub 1)-x(sub 6) Then an area wherein variation in the density of the estimated image exceeds a specific value is selected. In the area, intermediate **parameters** by the partial differentiation of the estimated **image** as to the respective **parameters** are calculated and a normal equation is found from residual to calculate the corrected vector .delta.x' of the unknown parameter vector x(sup (k)). Then it is decided whether or not the image is converged by using the degree of coincidence between the estimated **image** based upon the unknown **parameter vector** and the input **image** . When not, **similar** processing is repeated to approximate the **reference image** to the input image.

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File 348:EUROPEAN PATENTS 1978-2006/ 200615
         (c) 2006 European Patent Office
File 349:PCT FULLTEXT 1979-2006/UB=20060406,UT=20060330
         (c) 2006 WIPO/Univentio

Set     Items   Description
S1     254019   (COMMON OR SHARED OR SAME OR IDENTICAL OR SIMILAR OR MATCH-
             ??? OR ANALOGOUS OR CORRESPOND??? OR CORRELAT???)(5N)(DESCRIP-
             TOR? ? OR ATTRIBUTE? ? OR ASPECT? ? OR TRAIT? ? OR CHARACTERI-
             STIC? ? OR PROPERTY OR PROPERTIES OR PARAMETER? ? OR FEATURE?
             ?)
S2     459470   (COMMON OR SHARED OR SAME OR IDENTICAL OR SIMILAR OR MATCH-
             ??? OR ANALOGOUS OR CORRESPOND??? OR CORRELAT???)(5N)(VECTOR?
             ? OR ELEMENT? ? OR COMPONENT? ? OR POINTS OR PORTION? ?)
S3      20491   (NUMBER OR AMOUNT OR VOLUME OR QUANTITY)(5W)S1:S2
S4     129079   (TOTAL??? OR SUM OR ALL OR COLLECTIVE OR COMBINED OR ENTIRE
              OR ALL)(5W)(DESCRIPTOR? ? OR ATTRIBUTE? ? OR ASPECT? ? OR TR-
             AIT? ? OR CHARACTERISTIC? ? OR PROPERTY OR PROPERTIES OR PARA-
             METER? ? OR FEATURE? ? OR VECTOR? ?)
S5     246552   (TOTAL??? OR SUM OR ALL OR COLLECTIVE OR COMBINED OR ENTIRE
              OR ALL)(5W)(ELEMENT? ? OR COMPONENT? ? OR POINTS OR PORTION?
             ?)
S6        102   (RATIO? ? OR PERCENTAG?? OR PROPORTION?? OR FUNCTION)(10N)-
             S3(10N)S4:S5
S7      95471   (IMAGE? ? OR PHOTO? ? OR PHOTOGRAPH? ? OR PICTURE? ? OR DR-
             AWING? ? OR GRAPHIC? ? OR OBJECT? ?)(5N)(MATCH??? OR SIMILAR?
             OR DISTANCE OR EQUIVALEN??? OR CORRELAT??? OR EQUATE OR EQUAT-
             E? ? OR EQUATING)
S8          6   S6 AND S7/TI,AB,CM
S9        886   (RATIO? ? OR PERCENTAG?? OR PROPORTION?? OR FUNCTION)(10N)-
             S3
S10        41   S9 AND S7/TI,AB,CM
```

10/3,K/5 (Item 5 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01663870
Vehicle surroundings monitoring device, and image production method
Vorrichtung zum Uberwachen der Umgebung eines Fahrzeuges und Verfahren zur Bilderzeugung
Appareil de surveillance de l'environnement d'un vehicule et procede pour la production d'images
PATENT ASSIGNEE:
MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD., (216883), 1006, Oaza-Kadoma, Kadoma-shi, Osaka 571-8501, (JP), (Applicant designated States: all)
INVENTOR:
Nobori, Kunio, 16-1-811, Joshoji-cho, Kadoma-shi, Osaka 571-0063, (JP)
Nakagawa, Masamichi, 22-5-304, Fujisaka-kitamachi, Hirakata-shi, Osaka 573-0151, (JP)
Sato, Satoshi, 3-14-337, Miyuki-higashimachi, Neyagawa-shi, Osaka 572-0055, (JP)
Nakata, Mikiya, 1-A-505, Gakuen-asahi-cho, Nara-shi, Nara 631-0016, (JP)
LEGAL REPRESENTATIVE:
Grunecker, Kinkeldey, Stockmair & Schwanhausser Anwaltssozietat (100721), Maximilianstrasse 58, 80538 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 1367408 A2 031203 (Basic)
EP 1367408 A3 040204
APPLICATION (CC, No, Date): EP 2003012543 030602;
PRIORITY (CC, No, Date): JP 2002159085 020531
DESIGNATED STATES: AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; HU; IE; IT; LI; LU; MC; NL; PT; RO; SE; SI; SK; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK
INTERNATIONAL PATENT CLASS (V7): G01S-011/12; G06T-007/00; H04N-007/18
ABSTRACT WORD COUNT: 115
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200349	845
SPEC A	(English)	200349	9092
Total word count - document A			9937
Total word count - document B			0
Total word count - documents A + B			9937

...SPECIFICATION having a reliability equal to or higher than the predetermined threshold rth is counted. The **ratio** m/n of the **number** m of **corresponding points** equal to or higher than the threshold rth to the total number n is compared...

...CLAIMS the image fixed-synthesis section perform image synthesis so that the first and second synthesized **images match** with each other in the position of the road surface.
5. The device of Claim...

...is provided with an obstacle sensor, and

the synthesis scheme selection section selects a synthesized **image** by additional use of **distance** information indicating a distance value from an obstacle obtained from the obstacle sensor.
8. The...

10/3,K/6 (Item 6 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01510214
Reducing accumulated systematic errors in image correlation displacement (Speckle) with sub-pixel resolution
Reduzierung aufsummierter systematischer Fehler bei der Korrelation verschobener Bilder (Speckle) mit sub-pixel Auflosung
Reduction des fautes systematiques accumulees par la correlation des images deplacees (Speckle) avec une resolution sub-pixel
PATENT ASSIGNEE:
Mitutoyo Corporation, (1108728), 20-1, Sakado 1-chome, Takatsu-ku, Kawasaki-shi, Kanagawa-ken 213-0012, (JP), (Applicant designated States: all)
INVENTOR:
Nahum, Michael, 1810 10th Place West, Kirkland, Washington 98033, (US)
LEGAL REPRESENTATIVE:
Grunecker, Kinkeldey, Stockmair & Schwanhausser Anwaltssozietat (100721), Maximilianstrasse 58, 80538 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 1262738 A1 021204 (Basic)
APPLICATION (CC, No, Date): EP 2002009472 020425;
PRIORITY (CC, No, Date): US 860636 010521
DESIGNATED STATES: DE; FR; GB; IT
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS (V7): G01B-011/16
ABSTRACT WORD COUNT: 104
NOTE:
Figure number on first page: 1, 7

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200249	2702
SPEC A	(English)	200249	19098
Total word count - document A			21800
Total word count - document B			0
Total word count - documents A + B			21800

Reducing accumulated systematic errors in image correlation displacement (Speckle) with sub-pixel resolution
Reduction des fautes systematiques accumulees par la correlation des images deplacees (Speckle) avec une resolution sub-pixel

...ABSTRACT A1
A reference image updating method and apparatus used in an **image - correlation** system which updates a reference **image** when predetermined control parameters are met. An image corresponding to a displacement of a surface...

...this manner, systematic errors are prevented from accumulating thereby significantly removing systematic errors in the **image - correlation** system.

...SPECIFICATION trough, depending on how the pixel-by-pixel comparison is performed, in the plot of **correlation function** value **points** . The offset **amount corresponding** to the peak or trough represents the amount of displacement or deformation between the reference...

...systematic displacement estimation errors present when conventional sub-pixel estimation methods are applied to a **number** of **correlation function** value **points** , especially when the **correlation function** value **points** are arranged asymmetrically. However, the systems and methods disclosed in the 671 application fail to...

...CLAIMS A1
1. A method for reducing accumulated systematic displacement errors in an **image - correlation** -based displacement measuring system,

comprising:
determining at least one reference-class displacement between the two...

...one corresponding reference-class image pair based on a pre-determined error characteristic of the **image - correlation** -based displacement measuring system, b) acquiring the second image of the at least one corresponding...

...to the prescribed displacement, based on the operating characteristics and current operating state of the **image - correlation** -based displacement measuring system; and

wherein, for at least two reference-class image pairs:
a...

...reference-class image pairs is determined partly based on a predetermined error characteristic of the **image - correlation** -based displacement measuring system and partly based on the difference determined for the at least...

...reference-class image pairs is determined partly based on a predetermined error characteristic of the **image - correlation** -based displacement measuring system and partly based on the difference determined for the at least...

...to the prescribed displacement, based on the operating characteristics and current operating state of the **image - correlation** -based displacement measuring system.

10. The method of claim 9, wherein acquiring the second image...a corresponding movement of a surface which moves relative to a sensing device of the **image - correlation** -based displacement measuring system.
15. The method of claim 1, wherein at least one reference-class displacement is determined to a sub-pixel resolution during real-time operation of the **image - correlation** -based displacement measuring system.
16. The method of claim 1, wherein at least one reference-class displacement is determined to a sub-pixel resolution during real-time operation of the **image - correlation** -based displacement measuring system, and that at least one reference-class displacement and the corresponding reference-class image pair is recorded in the **image - correlation** -based displacement measuring system, for use during subsequent real-time operation of the **image - correlation** -based displacement measuring system.
17. The method of claim 1, wherein at least one reference...

...sub-pixel resolution by a prescribed procedure prior to subsequent real-time operation of the **image - correlation** -based displacement measuring system, and that at least one reference-class displacement and the corresponding reference-class image pair is recorded in the **image - correlation** -based displacement measuring system, for use during subsequent real-time operation of the **image - correlation** -based displacement measuring system.

18. A method for reducing accumulated systematic displacement errors in an **image - correlation** -based displacement measuring system, comprising:
determining at least one reference-class displacement between the two...

...class image pair that corresponds to a fractional part of the pixel-spacing of the **image - correlation** based displacement measuring system, the compensation based on a predetermined periodic error characteristic of the **image - correlation** -based displacement measuring system, b) acquiring the second image of the at least one corresponding...

10/3,K/7 (Item 7 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01434281
Image search system and image search method
System und Verfahren fur die Suche nach Bildern
Systeme et methode de recherche d'images
PATENT ASSIGNEE:
NEC CORPORATION, (236690), 7-1, Shiba 5-chome, Minato-ku, Tokyo, (JP), (Applicant designated States: all)
INVENTOR:
Kasutani, Eiji, NEC Corporation, 7-1, Shiba 5-chome, Minato-ku, Tokyo, (JP)
LEGAL REPRESENTATIVE:
VOSSIUS & PARTNER (100314), Siebertstrasse 4, 81675 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 1215591 A2 020619 (Basic)
EP 1215591 A3 040609
APPLICATION (CC, No, Date): EP 2001129276 011212;
PRIORITY (CC, No, Date): JP 2000378023 001212
DESIGNATED STATES: DE; FR; GB
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS (V7): G06F-017/30
ABSTRACT WORD COUNT: 191
NOTE:
Figure number on first page: 10

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200225	2700
SPEC A	(English)	200225	12795
Total word count - document A			15495
Total word count - document B			0
Total word count - documents A + B			15495

...ABSTRACT A2
An **image** search system for determining a **similarity** of an **image** whose feature are represented by either one of image features amounts, a color distribution features or a frequency distribution features, to search for a **similar image** , including a to-be-searched image features storage unit (60) for referring to data of...

...and the image features amount of each image to be searched based on the converted **image** features amount and determining a **similarity** of each **image** to search for a **similar image** .
...SPECIFICATION be compared (searched) should be prepared for the images.
In addition, even when an image **features amount** of a kind **common** to both the images is provided, a **function** of conducting comparison and search based on the image features should be further provided in...

...CLAIMS A2
1. An **image** search system for determining a **similarity** of an **image** whose feature are represented by either one of image features amounts, a color distribution features or a frequency distribution features, to search for a **similar image** , comprising:
means (10) for converting, with respect to an image set to be a target ...

...the image features amount of each said image to be searched based on said converted **image** features amount and determining a **similarity** of each **image** to search for a **similar image** .
2. The **image** search system as set forth in claim 1, further comprising

10/3,K/8 (Item 8 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01376387
Method and apparatus for ordering electronic data
Verfahren und Gerat um elektronische Daten zu bestellen
Procede et dispostif pour commander des donnees electroniques
PATENT ASSIGNEE:
LION Bioscience AG, (2630110), Im Neuenheimer Feld 515, 69120 Heidelberg, (DE), (Applicant designated States: all)
INVENTOR:
Minch, Eric Dr., Altes Holz 4, 69207 Sandhausen, (DE)
LEGAL REPRESENTATIVE:
Schohe, Stefan (85061), Forrester & Boehmert Pettenkoferstrasse 20-22, 80336 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 1170674 A2 020109 (Basic)
EP 1170674 A3 020417
APPLICATION (CC, No, Date): EP 2000125503 001121;
PRIORITY (CC, No, Date): EP 2000114636 000707; EP 2000115867 000724
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; TR
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS (V7): G06F-017/30
ABSTRACT WORD COUNT: 83
NOTE:
Figure number on first page: 5

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200202	1896
SPEC A	(English)	200202	12074
Total word count - document A			13970
Total word count - document B			0
Total word count - documents A + B			13970

...SPECIFICATION of the data elements at a certain position in two sequences or partial sequences. This **function** may especially depend on the **number** of **identical** data **elements** succeeding one another in two partial sequences in said data sets.
The invention also provides...written text.
In the context of the present invention, a preferred distance measure is a **function** related to the **number** of **common** data **elements** . This **function** is usually defined in such a manner that identical data sets have a distance zero...

...CLAIMS 3, characterized by the step of controlling a display device on the basis of said **correlation** data to create a **graphic** symbolic display of clusters at one or more levels.
5. Method according to one of...

...16, characterized in that said data sets comprise genetic information and said distance is a **function** of the **number** of **identical** data **elements** succeeding one another in two partial sequences in said data sets.
19. Method according to...

10/3,K/9 (Item 9 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01174357
Multi-modal information access

Multimodaler Informationzugriff
Acces multimode a des informations

PATENT ASSIGNEE:
Xerox Corporation, (219788), Xerox Square - 20A, 100 Clinton Avenue South, Rochester, New York 14644, (US), (Applicant designated States: all)
INVENTOR:
Chen, Francine R., 975 Sherman Avenue, Menlo Park, CA 94025, (US)
Schuetze, Hinrich, 100 Portola Drive no. 1, San Francisco, CA 94131-1552, (US)
Gargi, Ullas, 234 West Clinton Avenue, State College, PA 16803, (US)
Pitkow, James E., 742 Ellsworth Place, Palo Alto, CA 94306, (US)
Pirolli, Peter L., 2958 Sloat Boulevard, San Francisco, CA 94116, (US)
Chi, Ed H., 5241 Shoreview Avenue South, Minneapolis, Minnesota 55417-1937, (US)
Li, Jun, 2106 East 2nd Street no. 7, Bloomington, IN 47401, (US)
Niles, Leslie T., 254 Ventura Avenue, Palo Alto, CA 94306, (US)
LEGAL REPRESENTATIVE:
Grunecker, Kinkeldey, Stockmair & Schwanhausser Anwaltssozietat (100721), Maximilianstrasse 58, 80538 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 1024437 A2 000802 (Basic)
EP 1024437 A3 051221
APPLICATION (CC, No, Date): EP 2000101367 000124;
PRIORITY (CC, No, Date): US 117462 990126; US 421770 991019; US 425038 991019; US 421416 991019; US 421767 991019; US 425039 991019; US 421419 991019
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS (V7): G06F-017/30
ABSTRACT WORD COUNT: 110
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200031	659
SPEC A	(English)	200031	17327
Total word count - document A			17986
Total word count - document B			0
Total word count - documents A + B			17986

...SPECIFICATION of page accesses, with np)) rows (the total number of pages) and nu)) columns (the **number** of users). Each column **corresponds** to a **vector** generated by the **function** (phi)p)), the derivation of which is described in detail above. For example, the fifth...

...CLAIMS associating the at least one vector with the object.
5. A method for calculating the **similarity** between two **objects** in a collection of objects, wherein each object is associated with at least one multi...

...a first object and a second vector corresponding to a first feature of a second **object** ; and
computing a first **distance** metric between the first vector and the second vector.
6. A method for calculating the **similarity** between two **objects** in a collection of objects, wherein each object is associated with a plurality of multi...

...first vector corresponding to a first object and a second vector corresponding to a second **object** ,
for each feature, computing a **distance** metric between the first vector and the second vector; and

summing the distance metrics for...

10/3,K/11 (Item 11 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00814139
Matched filter circuit
Signalangepasste Filterschaltung
Circuit de filtrage apparie
PATENT ASSIGNEE:
YOZAN INC., (1218671), 3-5-18, Kitazawa, Setagaya-ku, Tokyo 155, (JP), (Proprietor designated states: all)
SHARP KABUSHIKI KAISHA, (260710), 22-22 Nagaike-cho, Abeno-ku, Osaka-shi, Osaka-fu 545-0013, (JP), (Proprietor designated states: all)
INVENTOR:
Shou, Guoliang, c/o Yozan Inc., 3-5-18, Kitazawa, Setagaya-ku, Tokyo 155, (JP)
Zhou, Changming, c/o Yozan Inc., 3-5-18, Kitazawa, Setagaya-ku, Tokyo 155, (JP)
Yamamoto, Makoto, c/o Yozan Inc., 3-5-18, Kitazawa, Setagaya-ku, Tokyo 155, (JP)
Takatori, Sunao, c/o Yozan Inc., 3-5-18, Kitazawa, Setagaya-ku, Tokyo 155, (JP)
LEGAL REPRESENTATIVE:
Grunecker, Kinkeldey, Stockmair & Schwanhausser Anwaltssozietat (100721), Maximilianstrasse 58, 80538 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 756378 A1 970129 (Basic)
EP 756378 B1 011024
APPLICATION (CC, No, Date): EP 96112146 960726;
PRIORITY (CC, No, Date): JP 95212517 950728
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS (V7): H03H-011/04; H03H-017/02
ABSTRACT WORD COUNT: 102
NOTE:
Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPAB97	1200
CLAIMS B	(English)	200143	1243
CLAIMS B	(German)	200143	1117
CLAIMS B	(French)	200143	1217
SPEC A	(English)	EPAB97	4217
SPEC B	(English)	200143	4265
Total word count - document A			5419
Total word count - document B			7842
Total word count - documents A + B			13261

...ABSTRACT A1
The present invention has an **object** to provide a **matched** filter with further reduced electric power. In a matched filter circuit according to the present...

...SPECIFICATION the user. The number of codes included in each spreading code is defined as "spreading **ratio** " equal to a number of taps or a **number** of multiplication **portions** of the **matched** filter.
On the mobile communication, multi-path signals may reach the receiver consisting of a...

...SPECIFICATION the user. The number of codes included in each spreading code is defined as "spreading **ratio** " equal to a number of taps or a **number** of multiplication **portions** of the **matched** filter.
On the mobile communication, multi-path signals may reach the receiver

consisting of a...

10/3,K/12 (Item 12 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00742641
Image processing method and apparatus
Bildverarbeitungsverfahren und -gerat
Procede et appareil de traitement d'images
PATENT ASSIGNEE:
CANON KABUSHIKI KAISHA, (542361), 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, (JP), (applicant designated states: DE;ES;FR;GB;IT;NL)
INVENTOR:
Iijima, Katsumi, c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, (JP)
Tokumitsu, Jun, c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, (JP)
Matsugu, Masakazu, c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, (JP)
Yano, Kotaro, c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, (JP)
Kurahashi, Sunao, c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, (JP)
Kondo, Toshiaki, c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, (JP)
Mori, Katsuhiko, c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, (JP)
Ishikawa, Motohiro, c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, (JP)
LEGAL REPRESENTATIVE:
Beresford, Keith Denis Lewis et al (28273), BERESFORD & Co. 2-5 Warwick Court High Holborn, London WC1R 5DJ, (GB)
PATENT (CC, No, Kind, Date): EP 701369 A1 960313 (Basic)
APPLICATION (CC, No, Date): EP 95306297 950908;
PRIORITY (CC, No, Date): JP 94216323 940909; JP 95154654 950621; JP 95166233 950630
DESIGNATED STATES: DE; ES; FR; GB; IT; NL
RELATED DIVISIONAL NUMBER(S) - PN (AN):
(EP 2004076832)
INTERNATIONAL PATENT CLASS (V7): H04N-007/01;
ABSTRACT WORD COUNT: 133

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:
Available Text Language Update Word Count
CLAIMS A (English) EPAB96 3389
SPEC A (English) EPAB96 11737
Total word count - document A 15126
Total word count - document B 0
Total word count - documents A + B 15126

...CLAIMS corresponding points on the basis of block matching;

calculation means for calculating coordinates including a **distance** to an **object** to be sensed on the basis of the detected corresponding points; and

image generating means...

...corresponding points on the basis of block matching;

calculation means for calculating coordinates including a **distance** to an **object** to be sensed on the basis of the detected

corresponding points; and

image generating means...

...by said first detection means at first and second times upon determining that an evaluation **function** including a predetermined **feature amount** of the **corresponding points** at the first and second times and the movement information is smaller than a predetermined...

...amount includes basic color components.

17. The apparatus according to claim 14, wherein the evaluation **function** is a **function** of a distance between a **feature amount** of **corresponding points** at the first time and a feature amount of positions obtained by correcting positions of...corresponding point detection means comprises:

stereo image corresponding point detection means for detecting, by block **matching**, corresponding points between stereo **images** which are sensed from different viewpoints at the same time;

left image corresponding point detection...

10/3,K/13 (Item 13 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00594702
Process for transmitting and/or storing information
Verfahren zum Ubertragen und/oder Speichern von Informationen
Procede de transmission et/ou de stockage d'informations
PATENT ASSIGNEE:
FONTECH Ltd, (1714590), 131 Hapalmach Street, Beer-Sheva, (IL),
(applicant designated states:
AT;BE;CH;DE;DK;ES;FR;GB;GR;IE;IT;LI;LU;MC;NL;PT;SE)
INVENTOR:
Kafri, Oded, 3 Ehud Street, Beer-Sheva, (IL)
LEGAL REPRESENTATIVE:
Passini, Angelo et al (40871), NOTARBARTOLO & GERVASI S. R. L., Corso di Porta Vittoria, 9, 20122 Milano, (IT)
PATENT (CC, No, Kind, Date): EP 598357 A1 940525 (Basic)
EP 598357 B1 990224
APPLICATION (CC, No, Date): EP 93118357 931112;
PRIORITY (CC, No, Date): IL 10375592 921115; IL 10549393 930422
DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
INTERNATIONAL PATENT CLASS (V7): H04N-001/44; G09C-005/00;
ABSTRACT WORD COUNT: 120

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	9907	1171
CLAIMS B	(German)	9907	1062
CLAIMS B	(French)	9907	1204
SPEC B	(English)	9907	8491
Total word count - document A			0
Total word count - document B			11928
Total word count - documents A + B			11928

...ABSTRACT of information defined in digital form comprises transforming the clear file, containing said information, to **graphic equivalent** form, transmitting and/or storing the same in such **graphic - equivalent** form and bringing it back to digital form. An article of manufacture is also provided which consists of the **graphic - equivalent** form of a computer file defined on a backing. In a particular form of the...

...SPECIFICATION conventionally accepted as representing file elements, when these latter appear, should be less than the **number** of possible arrays having the **same number** of **component** bits, and more preferably the **ratio** of the two numbers should be at least 64, preferably at least 128 and still...conventionally accepted as representing file units, when these latter appear, should be less than the **number** of possible arrays having the **same number** of **component** bits, and more preferably the **ratio** of the two numbers should be at least 64, preferably at least 128 and still...

10/3,K/15 (Item 15 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00421797
Point pattern matching method and system as well as picture recognizing method and system using the same
Verfahren und System zum Vergleichen von Punktmustern sowie Bilderkennungsverfahren und -system mit Verwendung desselben
Methode et systeme de comparaison de configurations de points ainsi que

methode et systeme de reconnaissance d'images les utilisant
PATENT ASSIGNEE:
HITACHI, LTD., (204141), 6, Kanda Surugadai 4-chome, Chiyoda-ku, Tokyo 101, (JP), (applicant designated states: DE;FR;GB)
INVENTOR:
Sakou, Hiroshi, 6-27-706, Kamimuneoka-4-chome, Shiki-shi, (JP)
Uecker, Darrin R., 23 Plumas Goleta, CA 93117, (US)
LEGAL REPRESENTATIVE:
Strehl Schubel-Hopf Groening & Partner (100941), Maximilianstrasse 54, D-80538 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 422654 A2 910417 (Basic)
EP 422654 A3 930113
EP 422654 B1 960306
APPLICATION (CC, No, Date): EP 90119522 901011;
PRIORITY (CC, No, Date): JP 89264916 891013
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS (V7): G06K-009/66;
ABSTRACT WORD COUNT: 169

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPABF1	2093
CLAIMS B	(English)	EPAB96	2120
CLAIMS B	(German)	EPAB96	2101
CLAIMS B	(French)	EPAB96	2342
SPEC A	(English)	EPABF1	7660
SPEC B	(English)	EPAB96	7269
Total word count - document A			9753
Total word count - document B			13832
Total word count - documents A + B			23585

...ABSTRACT 0", it is determined that the point pair combination associated with the neuron is not **matched** . (see **image** in original document)

...SPECIFICATION the characteristic points can be determined. It has been found from our experiments that the **number** of iterations necessary for **matching** between the **characteristic points** , i.e., the number of t updating times is **proportional** to the number n of characteristic points. This is considered due to the effect of...

...SPECIFICATION the characteristic points can be determined. It has been found from our experiments that the **number** of iterations necessary for **matching** between the **characteristic points** , i.e., the number of t updating times is **proportional** to the number n of characteristic points. This is considered due to the effect of...

...CLAIMS exceed said second threshold value, the point pair combination associated with the neuron is not **matched** .
5. An **object** recognising system for recognising a site of an object in an image picture through picture...

10/3,K/18 (Item 18 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00359202
Picture motion measurement.
Bild-Bewegungsmessung.
Mesure de mouvement d'image.
PATENT ASSIGNEE:
PHILIPS ELECTRONICS UK LIMITED, (215201), 420-430 London Road, Croydon CR9 3QR, (GB), (applicant designated states: GB)
Philips Electronics N.V., (200769), Groenewoudseweg 1, NL-5621 BA

Eindhoven, (NL), (applicant designated states: DE;FR;IT)
INVENTOR:
Fernando, Gerard Marius Xavier, Philips Research Laboratories, Redhill Surrey RH1 5HA, (GB)
LEGAL REPRESENTATIVE:
Andrews, Arthur Stanley et al (27711), Philips Electronics UK Limited Patents and Trade Marks Department Cross Oak Lane, Redhill, Surrey RH1 5HA, (GB)
PATENT (CC, No, Kind, Date): EP 367310 A2 900509 (Basic)
EP 367310 A3 910911
EP 367310 B1 950517
APPLICATION (CC, No, Date): EP 89202207 890901;
PRIORITY (CC, No, Date): GB 8820838 880905
DESIGNATED STATES: DE; FR; GB; IT
INTERNATIONAL PATENT CLASS (V7): H04N-005/14; G06T-007/20;
ABSTRACT WORD COUNT: 195

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	EPABF1	476
CLAIMS B	(English)	EPAB95	917
CLAIMS B	(German)	EPAB95	800
CLAIMS B	(French)	EPAB95	1086
SPEC A	(English)	EPABF1	1655
SPEC B	(English)	EPAB95	1139
Total word count - document A			2131
Total word count - document B			3942
Total word count - documents A + B			6073

...SPECIFICATION of a given number of sample points of greatest magnitude in said low resolution correlation **function** ,
iv) applying the locations found for said given **number** of sample **points** to said higher resolution **correlation function** to identify the corresponding sample points in said higher resolution correlation **function** ,
v) determining the positions of peaks associated with the said **number** of sample **points** in said higher resolution **correlation function** which positions are defined to sub-sample interval accuracy.
Such a method has the advantage...

...of a given number of sample points of greatest magnitude in said low resolution correlation **function** , means for applying the locations found for said given **number** of sample **points** to said higher resolution **correlation function** to identify the corresponding sample points in said higher resolution correlation function, and means for determining the positions of peaks associated with the said **number** of sample **points** in said higher resolution **correlation function** which positions are defined to sub-sample interval accuracy.
The apparatus may be further characterised...

...CLAIMS for the production of motion vectors, said method being characterised by the steps of:-
i) **correlating** two **pictures** to determine low resolution **correlation** as a function of displacement thereby to determine sample correlation values to a low resolution,
ii) **correlating** said two **pictures** to determine higher resolution **correlation** as a function of displacement thereby to determine sample correlation values to a higher resolution...

...of a given number of sample points of greatest magnitude in said low resolution correlation **function** ,
iv) applying the positions found for said given **number** of sample **points** to said higher resolution **correlation function** to identify the corresponding sample points in said higher resolution

correlation **function** ,

v) determining the locations of peaks associated with the said **number** of sample **points** in said higher resolution **correlation function** which locations are defined to sub-sample interval accuracy.

ll protection types applied unless otherwise stated - for applications 2004+)
AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PL PT RO SE SI SK TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) BW GH GM KE LS MW MZ NA SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 11169

Fulltext Availability:
Detailed Description
Claims

Detailed Description
... single color attributes. Hence, the length of a colored portion in a color scale is **proportional** to the **number** of graphic **elements** , whose **corresponding** indexation data falls into a given range represented by the colored portion. To do this...

Claim
... scale (3 1) are designed so as to obtain a substantially even density 0 of **matching** **graphic** elements for all positions of the marker (34) along the composite color scale (3 1...
?

```
File   8:Ei Compendex(R) 1970-2006/Apr W1
         (c) 2006 Elsevier Eng.  Info. Inc.
File  35:Dissertation Abs Online 1861-2006/Mar
         (c) 2006 ProQuest Info&Learning
File  65:Inside Conferences 1993-2006/Apr 13
         (c) 2006 BLDSC all rts. reserv.
File   2:INSPEC 1898-2006/Apr W1
         (c) 2006 Institution of Electrical Engineers
File  94:JICST-EPlus 1985-2006/Jan W3
         (c)2006 Japan Science and Tech Corp(JST)
File   6:NTIS 1964-2006/Apr W1
         (c) 2006 NTIS, Intl Cpyrght All Rights Res
File 144:Pascal 1973-2006/Mar W3
         (c) 2006 INIST/CNRS
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File  34:SciSearch(R) Cited Ref Sci 1990-2006/Apr W2
         (c) 2006 Inst for Sci Info
File  99:Wilson Appl. Sci & Tech Abs 1983-2006/Mar
         (c) 2006 The HW Wilson Co.
File 266:FEDRIP 2005/Dec
         Comp & dist by NTIS, Intl Copyright All Rights Res
File  95:TEME-Technology & Management 1989-2006/Apr W2
         (c) 2006 FIZ TECHNIK
File  62:SPIN(R) 1975-2006/Mar W1
         (c) 2006 American Institute of Physics
File 239:Mathsci 1940-2006/May
         (c) 2006 American Mathematical Society

Set     Items   Description
S1     609800   (COMMON OR SHARED OR SAME OR IDENTICAL OR SIMILAR OR MATCH-
              ??? OR ANALOGOUS OR CORRESPOND??? OR CORRELAT???)(5N)(DESCRIP-
              TOR? ? OR ATTRIBUTE? ? OR ASPECT? ? OR TRAIT? ? OR CHARACTERI-
              STIC? ? OR PROPERTY OR PROPERTIES OR PARAMETER? ? OR FEATURE?
              ?)
S2     245287   (COMMON OR SHARED OR SAME OR IDENTICAL OR SIMILAR OR MATCH-
              ??? OR ANALOGOUS OR CORRESPOND??? OR CORRELAT???)(5N)(VECTOR?
              ? OR ELEMENT? ? OR COMPONENT? ? OR POINTS OR PORTION? ?)
S3      11404   (NUMBER OR AMOUNT OR VOLUME OR QUANTITY)(5W)S1:S2
S4     161553   (IMAGE? ? OR PHOTO? ? OR PHOTOGRAPH? ? OR PICTURE? ? OR DR-
              AWING? ? OR GRAPHIC? ? OR OBJECT? ? OR FINGERPRINT? ?)(5N)(MA-
              TCH??? OR SIMILAR? OR DISTANCE OR EQUIVALEN??? OR CORRELAT???
              OR EQUATE OR EQUATE? ? OR EQUATING)
S5        661   (RATIO? ? OR PERCENTAG?? OR PROPORTION?? OR FUNCTION)(10N)-
              S3
S6         16   S5 AND S4
S7         13   RD  (unique items)
```

7/5/2 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05431812 E.I. No: EIP99124936743
Title: Finding the collineation between two projective reconstructions
Author: Csurka, Gabriella; Demirdjian, David; Horaud, Radu
Corporate Source: GRAVIR-IMAG & INRIA Rhone-Alpes, Montbonnot Saint Martin, Fr
Source: Computer Vision and Image Understanding v 75 n 3 1999. p 260-268
Publication Year: 1999
CODEN: CVIUF4 ISSN: 1077-3142
Language: English
Document Type: JA; (Journal Article) Treatment: G; (General Review)
Journal Announcement: 0001w4
Abstract: The problem of finding the collineation between two 3D projective reconstructions has been proved to be useful for a variety of tasks such as calibration of a stereo rig and 3D affine and/or Euclidean reconstruction. Moreover, such a collineation may well be viewed as a point transfer method between two image pairs with applications to visually guided robot control. Despite this potential, methods for properly estimating such a projective transformation have received little attention in the past. In this paper we describe linear, nonlinear, and robust methods for estimating this transformation. We test the numerical stability of these methods with respect to **image** noise, to the **number** of **matched points** , and as a **function** of the number of outliers. Finally, we devise a specialized technique for the case where 3D Euclidean coordinates are provided for a number of control points. (Author abstract) 17 Refs.
Descriptors: *Image reconstruction; Three dimensional; Robustness (control systems); Cameras; Computer vision; Two dimensional
Identifiers: Collineation; Projective reconstructions
Classification Codes:
741.1 (Light/Optics); 731.1 (Control Systems); 742.2 (Photographic Equipment)
741 (Optics & Optical Devices); 731 (Automatic Control Principles); 742 (Cameras & Photography)
74 (OPTICAL TECHNOLOGY); 73 (CONTROL ENGINEERING)

7/5/5 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

09709686
Title: Improved optimum family genetic algorithm and its application for image matching
Author(s): Wang Sun'an; Li Jianhua; Yu Qing
Author Affiliation: Sch. of Mech. Eng., Xi'an Jiaotong Univ., China
Journal: Chinese Journal of Scientific Instrument vol.26, no.10 p. 1027-30
Publisher: China Instrum. Soc,
Publication Date: Oct. 2005 Country of Publication: China
CODEN: YYXUDY ISSN: 0254-3087
SICI: 0254-3087(200510)26:10L.1027:IOFG;1-Z
Material Identity Number: G383-2005-014
Language: Chinese Document Type: Journal Paper (JP)
Treatment: Practical (P); Experimental (X)
Abstract: Based on the analysis of the speed and stability of the genetic algorithm applied to functions with multi-modality and multi-deceptive-problem, the improvement on powerful genetic algorithm (family genetic algorithm) is put forward that individual evolvement is just based on not the whole population but the optimal family to avoid the premature phenomenon. At the same time, the new algorithm is applied to **image matching** to prove the improvement effective. In order to reduce the calculation **amount** on non-optimum **points** the sequence **similar**

detection algorithm (SSDA) is introduced to be the fitness **function** . The experimental results indicate that improved optimum family genetic algorithm and SSDA can be benefited from each other. The whole algorithm is great effective in improving the speed of **image matching** and its performance is steady. It can conclude that the new algorithm is potential in solving the similar problems. (9 Refs)

Subfile: B C

Descriptors: genetic algorithms; **image matching**

Identifiers: optimum family genetic algorithm; **image matching** ; sequence similar detection algorithm; fitness function

Class Codes: B6135 (Optical, image and video signal processing); B0260 (Optimisation techniques); C5260B (Computer vision and image processing techniques); C1250M (Image recognition); C1180 (Optimisation techniques)

7/5/6 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

09550805 INSPEC Abstract Number: C2005-10-7440-022

Title: Pointwise digital image correlation **using genetic algorithms**

Author(s): Jin, H.; Bruck, H.A.

Author Affiliation: Dept. of Mech. Eng., Maryland Univ., Baltimore, MD, USA

Journal: Experimental Techniques vol.29, no.1 p.36-9

Publisher: Soc. Experimental Mech,

Publication Date: Jan.-Feb. 2005 Country of Publication: USA

CODEN: EXPTD2 ISSN: 0732-8818

SICI: 0732-8818(200501/02)29:1L.36:PDIC;1-S

Material Identity Number: D751-2005-002

Language: English Document Type: Journal Paper (JP)

Treatment: Practical (P); Theoretical (T)

Abstract: Digital **image correlation** (DIG) has become an accepted method for measuring full-field surface displacement and displacement gradients in solid mechanics. The principle of DIG is to mathematically compare unique subsets of data from digital image in a reference configuration to digital images in deformed configurations in order to determine the deformation parameters that can be applied to the reference subsets that provide the best **match** to the deformed **image** . The purpose of the work presented in this paper is to remove the constraint of constant displacements and displacement gradients within a subset, and permit the displacement field to vary discontinuously, as might be expected when a subset overlays an interface or crack. This will enable the technique of DIG to achieve the spatial resolution of alternative full-field deformation measurements techniques. Therefore, the kinematic description that is employed involves assessing the displacement of each pixel independently (i.e., pointwise) with subpixel accuracy. This results in a much larger **number** of **parameters** to optimize in the associated **correlation function** . Therefore, a genetic algorithm (GA) is employed in the pointwise DIG technique to provide a simpler and faster optimization approach than is achieved using conventional gradient-based or coarse-fine search methods. (11 Refs)

Subfile: C E

Descriptors: correlation methods; cracks; genetic algorithms; image resolution; mechanical engineering computing

Identifiers: pointwise digital **image correlation** ; genetic algorithms; deformation measurements techniques; pixel; coarse-fine search method; conventional gradient-based search method; full-field surface displacement; solid mechanics

Class Codes: C7440 (Civil and mechanical engineering computing); C5260B (Computer vision and image processing techniques); C1180 (Optimisation techniques)

7/5/10 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

14440844 PASCAL No.: 00-0099161
Target matching in synthetic aperture radar imagery using a non-linear optimization technique
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Recognition of targets in synthetic sperture radar (SAR) imagery is approached from the viewpoint of an optimization problem. Features are extracted from SAR target images and are treated as point sets. The matching problem is formulated as a non-linear objective **function** to maximize the **number** of **matched features** and minimize the distance between features. The minimum of this **function** is found using a deterministic annealing process. Registration is performed iteratively by using an analytically computed minimum at each temperature of the annealing. Thus, the images do not need to be initially registered as any translational error between them is solved for as part of the optimization. We have also extended the initial objective function to incorporate multiple feature classes. This matching method is robust to spurious, missing and migrating features. Matching results are presented for simulated XPATCH and real MSTAR SAR target imagery demonstrating the utility of this approach.

English Descriptors: Synthetic-aperture radar; Automatic recognition; Target detection; **Matching** task; **Image** processing; Optimization; Pattern extraction; Experimental study

French Descriptors: Radar ouverture synthetique; Reconnaissance automatique ; Detection cible; Tache appariement; Traitement image; Optimisation; Extraction forme; Etude experimentale

Classification Codes: 001B40B79Q; 001D02C03

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DIALOG(R)File 144:Pascal

12557352 PASCAL No.: 96-0238107
Automated knowledge-based system for stereo video metrology
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A knowledge-based system has been developed to help inexperienced users make measurements from stereo video images. The purpose of the system is to automate much of the routine functions and decision making in photogrammetric measurements on a personal computer (PC). The system can perform the following functions: (1) Check the validity of the input data; (2) warn of weak geometric conditions; (3) provide guidance, diagnostics, and counseling during success and failure modes; (4) conduct robust blunder detection; and (5) perform accuracy analysis through error propagation. The result was the development of a user-friendly vision system that can be used productively without in-depth knowledge of photogrammetry. Experimental results showed that the PC-based vision system achieved a potential accuracy of about one pixel on the image plane for planar coordinates. Lower measurement accuracy in the range of 4-5 pixels was obtained for the depth direction because of the intersection geometry and accuracy limitations in manual **image matching** . The statistical analysis scheme. based on random error propagation of the image coordinates, was a realistic accuracy estimator. Calculated three-dimensional (3D) measurement errors consistently fell within three times the estimated standard errors (3 sigma). Comparison with actual survey measurements showed that distances could be measured with an accuracy of better than 2 pixels, while volume and surface area were measured to within 3%. **Image** scale, base/ **object distance ratio** , **number** and distribution of control **points** , and accuracy limitation in manual **matching** had a significant impact on the measurement accuracy.

English Descriptors: Stereometry; Video technique; Photogrammetry; Photogrammetric survey; Knowledge base; Image analysis

French Descriptors: Stereometrie; Technique video; Photogrammetrie; Leve photogrammetrique; Base connaissance; Analyse image

Classification Codes: 001D14A09; 295

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DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

03744770 Genuine Article#: QC372 Number of References: 0
(NO REFS KEYED)
Title: AUTOMATED CORRELATION **OF INTRAVASCULAR ULTRASOUND** IMAGES **WITH ANGIOGRAPHY**
Author(s): GOWDA A; GOJER B; MOTAMEDI M; DAVIS MJ; FARRELL RW; RASTEGAR S; MILLER GE; KRONENBERG MW
Corporate Source: UNIV TEXAS,JENNIE SEALY HOSP,MED BRANCH,BIOMED LASERS & SPECTROSCOPY PROGRAM,ROUTE D-56/GALVESTON//TX/77555; UNIV TEXAS,JENNIE SEALY HOSP,MED BRANCH,BIOMED LASERS & SPECTROSCOPY PROGRAM,ROUTE D-56/GALVESTON//TX/77555
Journal: ECHOCARDIOGRAPHY-A JOURNAL OF CARDIOVASCULAR ULTRASOUND AND ALLIED TECHNIQUES, 1995, V12, N1 (JAN), P61-69
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Subfile: SciSearch; CC CLIN--Current Contents, Clinical Medicine
Journal Subject Category: CARDIOVASCULAR SYSTEM
Abstract: One limitation of intravascular ultrasound (IVUS) is the restriction to viewing one cross-sectional image at a time. Computerized three-dimensional reconstructions of IVUS images have been developed in an attempt to overcome this limitation. These algorithms, however, are limited by artifacts from catheter movements and rotation

within large vessels. Consequently, this technique has been applied only to straight segments of small caliber vessels. Contrast angiography has long been the standard for vascular imaging. In order to take advantage of both contrast angiography and IVUS, we developed a computer procedure to automatically **correlate** IVUS **images** with their corresponding locations on contrast angiograms, and to display both images in a side by side format. Models of the aortic arch and aorto-ileo-femoral system were constructed with artificial plaques located at various sites. The models were filled with iodinated contrast media and radiographic images were obtained. Timed pull-backs were performed in both models in order to obtain sets of serial cross-sectional images. For each data set, a digitized set of 75 serial IVUS images and model angiographic images were loaded in the computer procedure. We then **correlated** at least one IVUS **image** containing a known landmark with its position on the model angiogram. The procedure then automatically displayed sequential ultrasound images along with their corresponding positions on the reference angiogram. We analyzed the error of this algorithm as a **function** of the **number** of **correlation points** used. The maximum error was 4 mm over a total pullback distance of 130 mm (relative error of 3%). This algorithm was subsequently used to **correlate** IVUS **images** obtained from the aortic arch of a patient with their corresponding positions on an aortogram. Our results demonstrate that computer-based **correlation** of IVUS **images** with their corresponding positions on angiograms is accurate, may enhance the use of IVUS to assess vascular pathology, and provides an alternative to three-dimensional reconstructions.